MULTINATIONAL FIRMS AND ECONOMIC DEVELOPMENT: A CASE STUDY ON ELECTRONICS INDUSTRY IN HONG KONG

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ABSTRACT

The electronics industry is becoming more and more important to the manufacturing sector of Hong Kong, no matter in terms of value of export or the number of employment. Contributions made by the multinational firms were found indispensable to its development. They are successful in playing the role of 'tutor' to the industry in Hong Kong, as many local firms emerge in their foot-steps. By exploring the comparative advantages of the countries in the region through extensive participation, these multinational firms structure the mode of development and determine the rate of growth of the electronics industry of different countries in the region. Some division of work can be observed in the region due to their investments, with Hong Kong specializing in the advanced and fashionable consumer goods and equipment goods. The openness of the Hong Kong economy and the traditional non-intervention policy of government make the development process mostly a natural one, as distinct from all other countries in the region. The compactness of the Hong Kong's economy can make the integration of these firms into the local sector more smoothly. Most of the investments are made by American and Japanese firms, and strong national-specific characteristics can be observed. Nearly half of them are medium or small in size. The technology transferred to Hong Kong, though crucial to the development of the electronics industry, is inadequate to transform Hong Kong yet to be the producer of advanced products. Most MN firms have experienced rapid growth since the first date of their establishment, and about half of them still have short term expansion plans. However, heavy involvements are deterred

by the long term political uncertainty of Hong Kong. Beyond that, we may expect the electronics industry continue to develop in the future. Product diversification, automatic production process and products appealing to the higher income group are the direction of development in the consumer and equipment goods sectors. The manufacturing of components and parts for these products may also be attracted to Hong Kong, but they may not be as successful as the above two sectors. The MN firms producing standardized and labor-intensive products will phase out Hong Kong gradually, while those for diversified and advanced products will come in. The successful transition of the structural change of Hong Kong's electronics industry will depend on the interaction of three forces: the alert and flexible entrepreneurs, the more active role of the government, and the further participation of the multinational firms in the higher-end products.

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Yu Ip-kun

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CHAPTER I

INTRODUCTION

a) Background

The flow of knowledge, or more specifically, the transfer of technology from one country to another has long been regarded as one of the important factors of economic development. Many channels of technology transfer can be found, and the transfer made by multinational firms undoubtedly plays an important role. Technology transfer is one major factor for development, but other benefits from these firms which are also important for the economic development of the recipient countries can also be existent, including the bringing in of capital and entrepreneurship, the mobilization of otherwise idle resources, the training of local staff and the improvement of the balance of payments, etc. It is the purpose of this study to investigate how and to what extent that multinational firms can help the development of a less developed country. In this kind of study, the costs of foreign investment are frequently mentioned, such as the loss of economic autonomy, the stifling of the development of domestically-based factories, the continuous outflow of profits and so on; but they are generally more subtle and controversial.[1]

A multinational firm may simple be defined as "an enterprise which owns and controls activities in different countries."[2] However,

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[1] There are many studies on the benefits and costs of foreign investments to host countries. In fact, there are no general conclusion as both the investing and recipient countries are so diversified and the nature of investments differs a great deal.

[2] Peter J. Buckley & Mark Casson, The Future of the Multinational Enterprise, Macmillan Press, London, 1975, introduction.

the definition does not give the precise meaning of the words "owns" and "controls" as they can be interpreted either on the basis of share of equities or on de facto basis of ownership and control.[3] Adding to its shortcoming, the size of a multinational firm is a distinct factor to classify those really influential to development and worthnoting from those merely having a small plant outside the home country.[4] The definition by Lall and Streeten which stresses also the economic, organizational, and motivational aspects of a multinational firm[5] is more complete but is too complicated to apply to general study. For our purpose, multinational firm is just defined as an enterprise which owns (in whole or in part) and controls (or manages) production activities in different countries.

The most obvious empirical evidence for the importance of multinational firms to the economies of the less developed countries can be found in their share of exports in the total domestic exports. Cohen[6] has estimated that "... in 1971 foreign firms accounted for at least 15% of South Korea's $875 millions of exports of manufactures, at least 20% of Taiwan's $1,428 millions of exports of manufactures, and over 50% of Singapore's $221 millions of exports of manufactures." A parellel study by Lin and Mok[7] has suggested that foreign firms also accounted for 9.7% and 10.6% of Hong Kong's total domestic exports in 1973 and

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[3] International Investment and Multinational Enterprise - Responsibility of Parent Companies for the Subsidiaries, OECD, 1980, p. 7.

[4] For instance, Raymond Vernon pointed out that "... a cluster of this sort with less than $100 millions in sales rarely merit much attention.", Sovereignty at Bay: The Multinational Spread of U.S. Enterprises, New York: Basic Books, 1971, p. 4.

[5] Lall S. & Streeten P., Foreign Investment, Transnationals and Developing Countries, Macmillan, 1977, pp. 36-38.

[6] Cohen B.I., Multinational Firms and Asian Exports, Yale University, 1975, p. 10.

[7] Lin T.B. & Mok V., Trade, Foreign Investment and Development in Hong Kong, (mimeo.), Chinese University of Hong Kong, 1982, p. 55.

1974 respectively. It is important to note that all the countries mentioned above are well in their way to industrialization and their economic structures are becoming more and more similar to those of the OECD countries.[8] Therefore, a study on the multinational firms in relation to their contribution to rapid industrialization of a developing country is of great interest.

The effects of multinational firms to the development of an economy can be illustrated by an intensive study on a particular industry; here an industry is defined as a group of firms manufacturing products of similar nature which are poor substitutes for those of other groups in the economy. An industry which is relevant for studying the relationship between multinational participation and economic development through technological transfer and others should have the following characteristics:

i) The industry must have extensive foreign participation, so that the effects of multinational firms on the development of the host industry is meaningful for analysis;

ii) the industry must have great importance and (the better) an increasing weight in the economy at large, so that the effects as mentioned in i) are significant for the economy of the host country as a whole; and

iii) the industry must be experiencing rapid technical improvement and showing conspicuous transfer of technology.

Basing on the above criteria, our reason to choose the electronics industry for analysis is quite obvious. There are virtually no electronics production in Hong Kong before 1960. As the first radio assembly plant started production in 1959 and the semi-conductor factory in 1962, the

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[8] North/South Technology Transfer: The Adjustment Ahead, OECD, Paris, 1981, pp. 28-9.

electronics industry has been developing very fast ever since. Within the manufacturing sector, it is the second largest foreign exchange earner in 1980, (with a share of 18.9% in total domestic exports), next only to the clothing industry (with a share of 32.9%).[9] It is expected that electronics will be the leading industry in Hong Kong after the mid-80s.[10] Its development can be illustrated in Table I.1, which gives the basic indicators for its growth. In terms of the number of establishments, employment and export performance, the electronics industry has recorded remarkable increase over the years. The amounts of overseas investment remain the highest among all the manufacturing industries ever since the end of 1960s, though the percentage share is decreasing continuously in more recent years.

b) Layout

The basic objective of this study is to associate the broad feature of economic development to the micro aspect of multinational participation in a particular industry, the latter serving as a micro portrait of the former. The plan of the study is as follows:
The present chapter defines the scope of this study and provides the background information relevant to subsequent analysis. Chapter II briefly reviews some of the contemporary theories of multinational firms, about their rise and the effects to the host countries. Chapter III gives a comprehensive description of the electronics industry in Hong Kong, defining the boundaries of the industry, giving accounts of its development by sub-sectors, analysing its performance in terms of export and technology level, comparing with other manufacturing

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[9] Hong Kong Review of Overseas Trade in 1980, Census & Statistics Department, Hong Kong.

[10] Through extensive contacts with the top management of the multinational firms, this viewpoint is generally accepted without exception.

TABLE I.1

INDICATORS FOR GROWTH OF ELECTRONICS INDUSTRY IN HONG KONG

	ESTABLISHMENT		EMPLOYMENT		DOMESTIC EXPORT		OVERSEAS INVESTMENT	
Year	Number	As % of total in Manufacturing	Size	As % of total in Manufacturing	Value ($Mn)	As % of total in Manufacturing	Value ($Mn)	As % of total in overseas investment
1960	3	0.1	170	0.1	--	--	n.a.	n.a.
1968	109	0.9	30,600	6.4	492.3	5.8	n.a.	n.a.
1972	305	1.5	49,770	8.6	1,563.6	10.3	265.1	31.7
1974	414	1.3	50,170	7.4	2,648.4	11.6	589.7	35.6
1976	672	1.9	71,000	9.2	4,089.0	12.5	506.8	27.3
1977	711	1.9	70,190	9.3	4,688.0	13.4	516.1	26.1
1978	842	2.0	74,530	9.1	6,446.0	15.8	521.4	24.8
1980	1143	2.6	90,955	10.1	12,811.0	18.8	549.5	21.6

Sources: Report of the Advisory Committee on Diversification 1979, Hong Kong.
Industrial Development Division, Trade, Industry and Customs Department, Hong Kong.
Hong Kong Review of Overseas Trade in 1980, Hong Kong Trade Statistics, Hong Kong Monthly Digest of Statistics, Census & Statistics Department, Hong Kong

industries as well as identifying the reasons for its rapid development. The fourth chapter describes the importance of overseas investments to the development of the electronics industry. Statistics on overseas investments in Hong Kong are analysed and interpreted. In Chapter V, the behaviour and pattern of multinationals, notably the Japanese and American firms, are discussed with also reference to foreign investments in neighbouring countries. Chapter VI presents our survey results on Hong Kong's foreign electronics factories. In this chapter, the trends and patterns of investment, the extent and ways of technology transfer, the organizational structure of these factories are studied. In addition, other aspects such as production inputs, financial policy, the mobility of labor, and the level of technology are discussed. Special sttentions are given to comparing the operations of these firms with local firms. The final chapter is devoted to highlighting and summarizing the major findings of the whole study.

c) Data Sources and Limitations

The statistical data and other relevant information of the present study are from the following sources:

i) official publications from various government departments, and special reports of government;[11]

ii) published statistics of various non-profit making public bodies, semi-government organizations;[12]

iii) unpublished statistics of government departments, which are mainly for internal use;[13]

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[11] These government departments include the Census & Statistics Department, the Trade, Industry and Customs Department and the Labour Department of Hong Kong.

[12] These organizations include the Trade Development Council, the Hong Kong Productivity Centre and the Hong Kong Federation of Industries.

[13] Mainly the raw survey data of the Industrial Development Division of the Trade, Industry & Customs Department of Hong Kong on overseas investment.

iv) officially published statistics of other countries; and

v) survey results obtained from direct personal interviews with responsible people at the management level of a number of foreign electronics firms in Hong Kong.

As the statistics in Hong Kong are separately handled by different government departments, different data sources may have discrepancies — either because they are not the same in definitions or have different emphasis. Therefore, the statistical data and other relevant information from different sources must be handled with care. Just to mention one of the major difficulties in handling this sort of statistics, the definition of the electronics industry according to the SITC classification is not consistent with that of the ISIC classification. The grouping of the breakdown digits into the electronics industry is sometimes quite arbitrary.[14]

While Hong Kong does not suffer from much government red-tape, many of the statistics vital for analysis are still lacking. The most obvious examples are detailed production statistics[15] and information about capital flows. As a result, investigations on the economies of scale, labor productivity, the production function, and the analysis of investment in and out of Hong Kong must be based on very scanty data.

Another difficulty arising from the lack of information appears in the description of the technology and behaviour of foreign electronics firms, and this sort of information is quite essential in finding the relationship between economic development and foreign investment. Therefore, direct survey had to be conducted in order to collect the

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[14] Details of the classifications are discussed in Chapter III below.

[15] As information of this sort from the factories are submitted to the Trade, Industry & Customs Department on a voluntary and co-operative basis, data so collected may be incomplete or too rough for analysis. The most obvious defect is found in the products manufactured and the quantities exported.

required information. But this sort of first-hand information has turned out to be most useful. To supplement the survey, frequent contacts with bodies[16] having relevant studies in this field are made. This has enabled us to have some preliminary impression on the behaviour of the firms before the survey is conducted, and provided a basis for cross-checking of data afterwards.

In the government statistics, overseas investments denote all investments from places outside Hong Kong and mainland China. This deviates somewhat from our objective of a study on multinational firms. Nevertheless, as reviewed from our survey, the discrepancy between the overseas firms and the multinational firms in the electronics industry is extremely small. And therefore, in our subsequent description, the terms overseas investment, foreign investment and multinational investment are taken as synonymous.

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[16] The Industrial Development Division of the Trade, Industry & Customs Department and the Hong Kong Productivity Centre had both conducted surveys on the electronics industry in 1980.

CHAPTER II

THEORIES OF THE MULTINATIONAL FIRMS

a) Introduction

There is little doubt that multinational firms are important and will become more important in the world economy. On the one hand, MN firms help mobilize the productive inputs, notably capital, technology and information across national boundaries and thus increases the efficiency in the use of resources accordingly; but on the other hand, the more powerful the MN firms become, the more threat both the investing and host countries will find in implementing their economic policies.

Before going into the details concerning the MN firms, several qualifications have to be made which are relevant to subsequent discussion.

Firstly, a distinction must be made between portfolio investment and direct investment. Portfolio investment mainly concerns the flow of capital looking for better return in terms of interest income. The basic determinants of portfolio investment are interest and risk differentials. No control over foreign enterprises is exercised. This kind of investment was most prevalent in international investment, especially by the British, before the First World War.[1] Direct investment, on the other hand, exports capital, entrepreneurship, and technological knowhow. The motives are much more complicated. Apart from immediate gain in profits, we should also add the monopoly of

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[1] Bo Södersten, International Economics, (2nd edition), University of Lund, 1980, pp. 286-7.

markets, stability of growth, maintaining the technological lead, etc. The essential point to be noted in direct investment is control. It is the direct control over foreign enterprises, financial, technological and managerial, which makes direct investment different from the portfolio type. Direct investment becomes more important since World War II[2] and is correlated with rise of the MN firms. The scope of this study is confined only to direct foreign investment.

The second point to be mentioned is that though MN firms are important to the less developed countries, the majority of investing and recipient countries are found in the developed countries. The reasons for the investing countries coming from the developed ones are obvious, and the OECD countries in 1971 accounted for over 95% of the stock of foreign direct investment of the world.[3] For the period from 1950 to 1970, U.S. direct investment in the less developed countries witnessed a continuous decrease in relation to her overall investment overseas, from 52% in 1950 to only 34% in 1970.[4] The U.S. alone accounted for more than one-third of the total outflow of private investments to less developed countries in 1972.[5] This pattern of phenomenon can be explained by the behaviour of MN firms to monopolize markets, to stabilize their growth, and to further develop technologies, and investments in the developed countries, especially in manufactures, can best serve these objectives. However, as this study is to investigate the relationship between MN firms and economic development,

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[2] Södersten, ibid., p. 287.

[3] Södersten, ibid., p. 292.

[4] From Table 21.3, Södersten, ibid., p. 295, where the countries of Latin America and others are grouped together as the less developed countries. The developed countries so classifies include Canada, Western Europe, U.K., and Australia, S. Africa and New Zealand.

[5] A.P. Thirlwall, Growth and Development: With Special Reference to Developing Countries, Macmillan, second edition, 1979, p. 317.

emphasis is put on investments from developed countries to less developed countries.

Thirdly, though foreign direct investments are predominantly from developed countries, multinational firms based on the less developed countries are not too rare. This was demonstrated by Chen saying that "among the 500 largest industrial corporations outside the U.S. existed in Fortune (Aug. 14, 1978), 33 are Third World Multinationals."[6] Less developed countries invested both in other less developed countries as well as in the developed ones. Their investments in other less developed countries "could play a key role in lessening the structural dualism that now exists between the haves and the have nots."[7] Therefore, attention should also be paid to these third world multinationals.

Before going into details on the theoretical aspects of the MN firms, it is worth mentioning in brief the relevance of them to the Hong Kong's economy. It is true that the initiation of Hong Kong's industrialization is largely a result of local efforts, but overseas investments contribute much to broaden the industrial base and accelerate the growth rate. Because of its geographic position and small territory, Hong Kong relied much on its openness in order to compete and survive. Parallel with its openness, Hong Kong had long adopted the outward-looking policy long before it became a well-known strategy of development. Incidentally, this outward-looking strategy had been the chief factor for the rapid growth of Hong Kong after World War II. Towards the overseas investors, Hong Kong did not make use of special privileges to attract them nor discriminate them by special measures. This

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[6] E.K.Y. Chen, H.K. Multinationals in Asia - Characteristics and Objectives, (mimeo.), University of Hong Kong, 1980, p. 1.

[7] D.A. Heenan & W.J. Keegan, "The Rise of Third World Multinationals", Harvard Business Review, Jan.-Feb. 1979, p. 102.

attitude has two important consequences to Hong Kong: its early industrialization and early adoption of outward-looking strategy had successfully attracted many MN firms to invest in the newly established industries (say electronics, chemicals, etc.), and its policy of impartiality towards overseas investors had helped to integrate the foreign investments into the local economy. Therefore, our study on MN firms in the electronics industry has particular relevance to the Hong Kong's economy and to the industry as well.

b) Different Approaches

The very fact that multinational firms tend to concentrate in certain industries under strong oligopolistic environments and develop mainly in the period since World War II suggests that MN firms may have similar backgrounds. Generally speaking, the basic objective of a MN firm is to maximize the long-term profit of the group and to maintain the stability of growth of the enterprise with a global strategy by making use of various combinations of advantages.

Lall and Streeten have given a comprehensive summary of these oligopolistic advantages over the potential local competitors.[8] Because of their sizes and previous experiences, MN firms can obtain financial facilities from cheaper and easier sources both inside and outside of the host economy; and under similar rationale plus other factors, they may be in a better position to bargain with the host government in order to gain concessions. Their international operations have greatly reduced the exchange risk and highly improved the efficiency of their marketing. The most significant advantages are in technology, which include the economies of scale of R & D, the lower per unit cost of research due to a broader sales base, more opportunities to test new ideas, the spread of risks, the patent

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[8] S. Lall & P. Streeten, Foreign Investment, Transnational and Developing Countries, Macmillan, 1977, chapter 2.

system, as well as better co-ordination of technological activities. In addition, the advantages derived from the economies of scale of production, superior management, and better access to raw materials because of historical and other factors, etc., have all strengthened their positions.

The previous paragraph has described the basic background of the MN firms from the developed countries. Heenan and Keegan,[9] however, have suggested alternative routes to multinationalism. Three types of countries are possible candidates: the countries rich in natural resources, the labor-rich industrialized countries and the market-rich industrialized countries. There is a common characteristic for them: they all have a steady and substantial flow of income generated from the resources they possess, and thus gain experience of all sorts before going international.

Here below a brief review of the various theories of MN firms are presented, with special reference to the less developed countries. It should be well understood that each of these approaches may only emphasize one aspect of the whole problem. In other words, these different approaches may be found complementary to one other.

i) Marxian approach

The historical deterministic viewpoint of the Marxian theorists is one of the earliest systematic analysis on MN firms. Similar to its previous stages in history, capitalism will sooner or later complete its life cycle, with its highest stage being imperialism.[10] Because of limited natural resources, inadequate market demand and the inevitable economic instability associated with capitalistic societies, imperialistic expansion

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[9] Heenan & Keegan, op. cit., pp. 102-3.

[10] Lenin, Imperialism: The Highest Stage of Capitalism, Zürich, 1916.

is the only way out. For imperialistic oppression of the advanced capitalistic countries on the less developed countries, the tools are either military or economic. The vehicle of economic oppression is MN firms. There are two versions in this Marxian approach: the survival version and the exploitation version. The survival version argues that imperialism (and the appearance of MN firms) is the essential way to postpone the collapse of the capitalist system. The latter version is milder and accuses that direct investment is one of many forms of capitalistic oppression and exploitation under neo-colonialism.

No matter how relevant these versions might be when they were first proposed in the early twentieth century, they have lost much of their flavour now. The Marxian prediction is found inconsistent with the observed facts;[11] capitalistic countries have continued to grow while many of their counterparts in the socialist camp are stagnant. A serious blow to the survival version is that the portion of investments by MN firms in the less developed countries is found only marginal to the capitalistic economies, so that a sudden disappearance of all these investments would not be disastrous to the home countries. The milder version also becomes blurred when many newly-developed countries with extensive foreign participation are showing little sign of being exploited. However, it is still fair to question why foreign participation may not be all that beneficial to the less developed countries.[12]

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[11] Södersten, op. cit., pp. 308-9.

[12] H.W. Singer, "U.S. Direct Investment in Underdeveloped Areas: The Distribution of Gains between Investing and Borrowing Countires", American Economic Review: Paper and Proceedings, May 1950, pp. 479-80.

ii) Comparative advantage approach

In explaining foreign direct investments, the orthodox stream of thought provides two types of economic theories, i.e., either in the theory of international trade or in the theory of the firm. The Heckscher-Ohlin factor proportions theory of international trade, given all the neo-classical assumptions, suggests that a country will export products intensive of its abundant factor. Applied to direct foreign investment, this theory, in its simplest form, implies that capital abundant countries will export capital. However, this model cannot explain why there is a two-way flow of direct foreign investment within the same industry,[13] and "hardly provide a complete explanation of foreign investment as distinct from foreign borrowing or portfolio investment, of the growth of firms possessed of considerable monopoly power, of rich countries interpenetration of each other by their large firms, or of the transfer of other productive factors (technology, management, marketing) which are just as great a part of TNC investment as the transfer of capital."[14]

A modification of this theory has explicitly put managerial skills, technology and organizational advantages as one sort of factor endowment into the production function, viz,

$$Q = f(K, L, T)$$

where Q is the output, T is the variable accounting for management, technology and organizational advantages, and K, L, have their usual interpretations as capital and labor respectively.

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[13] B.I. Cohen, Multinational Firms and Asian Export, Yale University Press, 1975, pp. 16-7.

[14] Lall and Streeten, op. cit., chapter 2.

Another point to be noted in this theory is factor mobility. Labor is supposed to be least mobile. Capital is much better and therefore its supply is not so different among countries. But its efficient use depends on joint application with management, so that the determining factor becomes the more mobile management and technology mix. Hence, countries abundant in T tend to export management skills and technology intensive products, or directly export these techniquesabroad. If production takes place in countries initially lacking T, the increase in these techniques will imply a correspondingly increase in the marginal productivity of labor and capital, according to the neo-classical framework of analysis.

The third point to be mentioned is the source of comparative advantage. The firm-specific comparative advantage is the advantage possessed by the investing firm, and the national-specific comparative advantage is the advantage accrued to host country when investment takes place. It is argued that direct investment will take place when both the firm and national-specific advantages are strong or when firm-specific advantage is weak but national-specific advantage is strong. Direct export to the less developed countries will follow if firm-specific advantage is strong but national-specific advantage is weak. When both advantages are weak, the situation will be ambiguous.

iii) Product-life cycle approach[15]

Simply speaking, the product-life cycle version of direct investment is the theory on the investment of a firm going

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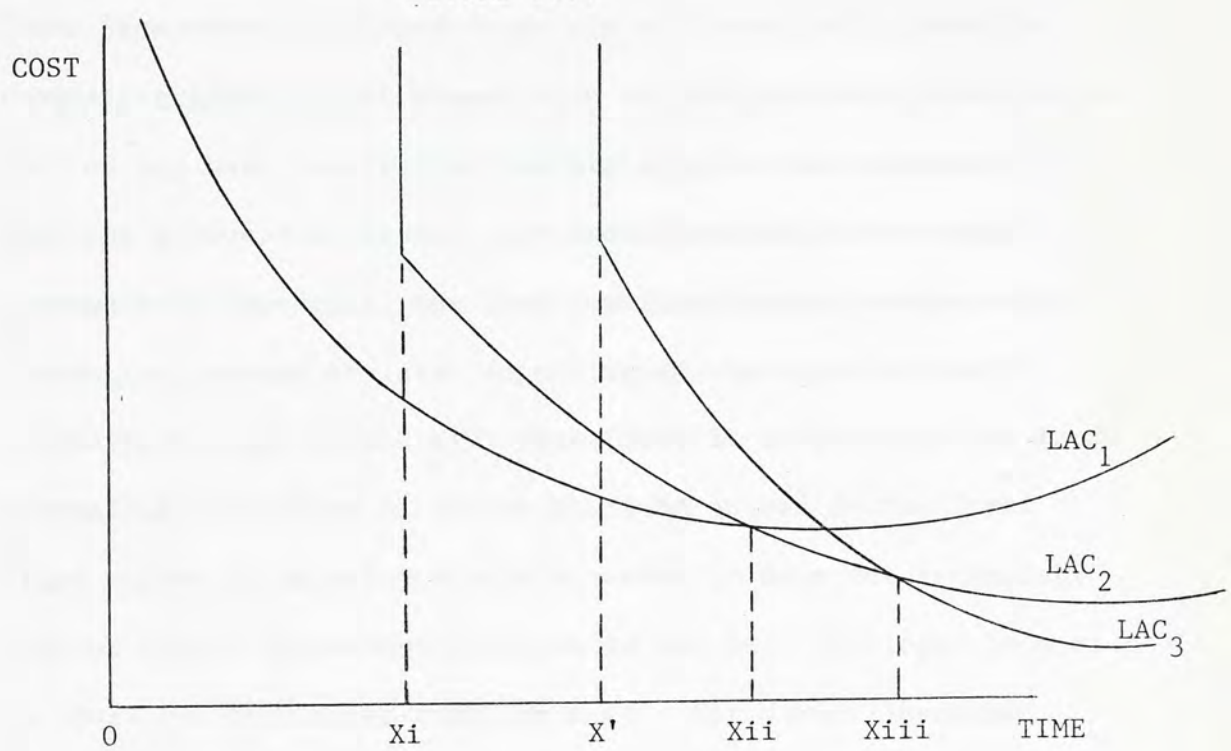
[15]The materials of this section are mainly come from the followings: E. Sciberral, Multinational Electronic Companies and National Economic Policies, Jai Press, 1977, chapter 2; Södersten, op. cit.; Lall and Streeten, op. cit.

downstream from developed countries to less developed countries, driven basically by cost considerationswhen a product starts from first innovation and later becomes more matured and standardized.

FIGURE II.1



In the diagram above, LAC_1 is the long-run average cost curve of a certain product of the innovation firm in the most advanced country, LAC_2 is that of the firms of other developed countries, LAC_3 is that of the firms of the less developed countries.

There are several stages in the product-life framework. The first stage is found between the period 0 to Xi, the distance of which measures the 'technology gap' between the innovating firm and other developed countries. Within this stage, the innovating firm enjoys temporary monopoly and earns supernormal profit while the production cost is continuous decreasing by economics of scale. Furthermore, the firm manufactures locally and caters to local markets as well as expanding overseas markets by export.

Between the period Xi and Xii, the knowledge of production diffuses. Firms from other developed countries can start production to meet their expanding home demands. Although the average cost of production for the innovating firm is still lower because of longer production run, it is envisaged that the firms from other developed countries will eventually beat the innovating firm in cost competition as they may have lower factor cost or may have learnt from the mistakes of the innovator. When the production process is standardized and labor cost becomes more important, the less developed countries can start production, sooner or later depending on the width of the technological gap Xi and X'. Therefore, it is critical for the innovating firm after Xi to use the fund gained in the first stage either in more R & D work in order to deep the technology lead or direct investment in firms in the less developed countries to lower the production cost, or both. For direct investment overseas, if the product is expected to become standardized very soon, the best policy is to invest in the less developed countries as soon as possible and make use of the best combination of the advantages in both the investing and host countries. If, on the other hand, the product can develop much further, direct investment will much better be made in the other developed countries, where more information concerning markets and technology can be collected.

The period between X' and Xiii is the period of keen international competition when the innovating firm, firms from other developed countries and from the less developed countries are all participating in the production. Unless tariffs or other trade restrictions are imposed by the developed countries, the

cycle completes beyond the point Xiii when production is ultimately shifted to firms in the less developed countries, either domestically-owned or foreign-owned.

iv) Internalization of markets

P.J. Buckley and M. Casson[16] have jointly proposed a long-term theory of the multinational firms, making use of the "internalization of an intermediate product market" principle.

The objective of the firms is assumed to maximize profit in a world of imperfect markets — both internal and external. Furthermore, it is assumed that "when markets in intermediate products are imperfect, there is an incentive to bypass them by creating internal markets. This involves bringing under common ownership and control the activities which are linked by the market."[17] This behaviour of internalizing markets across national boundaries will create multinational firms.

There are two types of this internalization. The first type is the internalization of intermediate products in the multi-stage production process. This generally involves vertically integrated production, either going backward for primary products or forward for final assembly. This type of internalization is particularly relevant for the less developed world, as these countries usually have under-utilized primary products or have abundant cheap labor for standardized assembly work.

The second type is the internalization of the market in knowledge, usually found after World War II when the demand for knowledge based products have increased a great deal, and the market for knowledge is very imperfect. Besides, the increasing

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[16] P.J. Buckley and M. Casson, op. cit., chapter 2.

[17] Buckley and Casson, ibid., p. 33.

returns to scale of knowledge and the external effects derived from employing more knowledge have urged many firms for such internalization. This process involves the integration of production, marketing and R & D to fulfil the global objective of the group. It is obvious that this type of internalization is mainly for the two-way flow of investment amongst the developed countries.

v) Induced investment approach

While most of the investment behaviour are determined by factors internal to the firm, such as oligopoly, technology or marketing, the driving forces for foreign investment may also be external to the firm. In other words, the MN firms may be rather passive in reacting to any change of the status quo. There are many types of induced investment.

When a country A initially exports certain products in substantial quantities to another country B, but the exports are later blocked by government policy (by tariffs or quotas), then the most natural defensive policy for A is to invest in similar lines of production in country B. This pattern generally appears in the investment from a more industrialized LDC to another LDC in labor intensive manufactured products.[18] This investment pattern can also help the replacement process of machinery of the investing countries by making the fullest use of the existing, older vintage assets.

Another type of induced investment is found in markets of high oligopolistic competition. Any one of the oligopolists

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[18] L.T. Wells, "Foreign Investment from the Third World: The Experience of Chinese Firms from Hong Kong", Columbia Journal of World Business, Spring 1978, p. 41.

investing abroad will be regarded as a threat to the status quo and force the remaining oligopolists to follow suit.[19] It is reported that the U.S. and Japanese investments in the electronics sectors in the 60's were mostly of this type.[20]

In reacting to overseas competition, one possible strategy is the buying up of rival firms abroad. But in this case, the size of the firms must be very large.[21] Besides, foreign investments may also be encouraged when the host governments offer very attractive investment conditions.

c) Impacts to the Host Countries

The impacts of the multinational firms to the less developed host countries are quite controversial. In short, the effects can be summarized in the following sections:

i) Resource transfer effects

The provision of capital is generally regarded to have a positive effect to the host countries by "filling the resource gap in the host country between desired investment and domestic savings."[22] The actual amount provided by the investing firms may be rather small[23] but these firms may mobilize local savings or obtain outside finance more easily. Because of their superior technology, longer production experience and better international connections, the importance of external injection of capital is far beyond what appears in percentage shares.

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[19] Hood and Young, The Economics of Multinational Enterprise, Longman, London & New York, 1979.

[20] K. Yoshihara, Japanese Investment in Southeast Asia, Honolulu: University Press of Hawaii, 1978, chapter 5.

[21] Södersten, op. cit., p. 298.

[22] Hood & Young, op. cit., chapter 5.

[23] Cohen, op. cit., p. 16.

ii) Technology transfer effects

Perhaps the most important effect of foreign investment is the transfer of technology. Technology may be regarded as "systematic knowledge for the manufacture of a product, for the application of a process or for the rendering of a service including any integrally associated managerial and marketing techniques."[24] And the transfer of technology is the process of diffusion of knowledge so defined and embodied in an actual operation of some kind for the recipient countries.

The contribution of the technological transfer to economic growth is widely accepted. There are a number of channels for such transfer. Direct search of technical knowledge from published information, through overseas consultant firms or suppliers of advanced capital goods is the most independent type of transfer. Moreover, international co-operation in the field of research and development, usually arranged at the government level, also constitute a transfer process. Joint-production arrangement, mainly in the form of processing, compensation trade, or joint-venture in the hope of maximizing the advantages of both parties, is another. However, the most efficient way of transmission, and by far the most important, is the transfer through direct foreign investment.

Direct foreign investment may only be the "outpost of the economies of the more developed investing countries"[25] if they cannot be integrated into the host economy. One way of integration is the diffusion of the injected technology into the

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[24] North/South Technology Transfer: The Adjustment Ahead, OECD, 1981, p. 18.

[25] H.W. Singer, op. cit., p. 475.

recipient countries. The degree of diffusion may be represented by the portions of firms, output or employment using the new technology to those of the entire economy. The speed of diffusion determines the rate of assimilation of the new technology and hence the rate of economic development. It is clear that the attitude of the MN firms exporting the technology are very crucial for the process of diffusion. If they disclose all or most of the knowledge to the local staffs, train local personnel, to provide the opportunities for design and research work to be done locally, or use more advanced machineries, etc., then the recipient countries may expect to benefit more. However, their attitude depends very much on their global objectives of the group and in general have little concern with the needs of the host countries.

There are many controversies concerning the transfer of technology through the MN firms. With respect to the purchase of technology, the pricing is quite arbitrary, as there is no efficient market for knowledge. For the seller, i.e. the MN firms, the marginal cost of using or selling already developed technology is zero, but the same piece of information may have enormous marginal cost to the buyer. Thus, price setting may be a hard bargaining process and the buyers are certainly in disadvantageous position, particularly when the buyers have virtually no a priori understanding of the technology.

Another area drawing special attention is the appropriateness of technology transferred. On the one hand, the products and processes may not be suitable to the market or factor endowment of the host countries. On the other hand, if the net return to these superior technology is totally absorbed by the foreign firms, in other words, the technologies are not efficiently

assimilated into the host countries, then, there will be no actual benefits to the rest of the economy.[26]

Another consideration comes from the stifling of local R & D. As the major research work is done in the investing countries, and local production dependent on imported technology, there may be no room for the development of domestic R & D for the host countries.

On the other hand, through the training of local staffs who may later leave the MN firms and help stimulate local production (the so-called spin-off effect), and through the demonstration effect, direct foreign investment may help to build up a pool of technical and management personnel as well as entrepreneurs.

iii) Balance of payment effects

In the short run, the balance of payment of the recipient countries must be improved due to the inflow of capital. However, after the investments have been established, the profits will flow out continuously thus having adverse effects on their balance of payments. Unless profits are not permitted to be remitted,[27] or the recipient countries are continuously receiving foreign investments to the extent sufficient to offset the outflow of profits, the long-term balance of payments must deteriorate.

Nevertheless, from a more dynamic angle of consideration, it may be argued that, as long as economic growth generated by foreign investments is greater than the outflow of profits, the recipient countries are still benefited from such investments.

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[26] Hood and Young, op. cit., chapter 5.

[27] Even so, the investing parent firm may remit the profits in disguised form, either by charging the cost of technology too high or through the policy of transfer pricing.

iv) Induced effects

Foreign firms in manufacturing are usually larger in size and thus can absorb more labor in the host countries. In the less developed countries where there is abundant supply of labor, the creation of job opportunities by foreign firms would not compete with other productive sectors in the host countries. The provision of more jobs, i.e., the idle resource effect, can help stabilize the host countries and generate more income through the multiplier effects.

Foreign investments may benefit the host countries through the linkage effects. As the foreign firms will buy materials of some sorts from the host countries, there must be some backward linkage effects, though the magnitude may not be very large. Besides, forward linkages are also found when the foreign firms manufacture intermediate products. These linkages effects, together with the transferred technology, can help the emergence of local firms in the related industries.

Externality may also be found when the foreign firms help to broaden the industrial base and put the recipient countries into international markets. Furthermore, the competition brought forth by the MN firms may help to improve the efficiency of the industry, though some adverse situation may occur when local productions are choked off by the greater economic power of MN firms. To the extent that foreign firms are more efficient in the use of resources, some resource reallocation effect may result.

v) Autonomy effects

Because of their sizes and superior technologies, MN firms are said to control or influence significant portions of

industries they invest in. By their cross country nature, these firms will pursue their own global objectives with the decision-making centre outside of the recipient countries. As a result, many policies of the MN firms, such as employment, technology development and investment have been accused of having harmful effects on the host economies. Furthermore, the MN firms can make use of transfer pricing in imported machineries and raw materials or in exported products, or benefit through the operations in foreign exchange, or draw the fund to invest elsewhere, so that the efficiency of host government policies to steer the economies may be largely reduced. Though there is still little quantitative evidence to support the argument, the importance of the issue should not be overlooked.[28]

d) Conclusion

The importance of MN firms to economic development is very clear and is widely accepted. The Marxian viewpoint, in either of its various versions, has been shown to have little relevance in the contemporary world. The neo-classical idea of comparative advantage is too vague to give a clear picture of the MN firms and their behaviour. The product-life cycle and the internalization of markets approaches do give some insights and provide some explanations concerning the MN firms, but they can only provide a partial account. The ideas of barriers to export and utilization of outdated assets also have their limitations. Therefore, for a whole description of the MN firms, a well-mixed combination of approaches are required.

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[28] An alleged example that MN firms did cause deterioration in the host economy is found in Chile between 1970-1973 under the Allende Government, see: S. de. Vylder, Chile 1970-73: The Political Economy of the Rise and Fall of the Unidad Popular, Stockholm, Unga Filosofers Förlag, 1974.

It is fair to say that MN firms are in general beneficial to both the investing and recipient countries, and world development at large. Benefits to the investing countries are straight-forward but many impacts on the recipient countries are still controversial. The reasons for this phenomenon are clear: the developed countries are more or less similar, but the less developed countries are so heterogeneous in their nature that little generalization can apply to them all.

However, there is at least one aspect affecting them in common, though in varying degrees. The rise of MN firms tends to undermine the power of the governments of the developing countries in steering their economies. But this is the price they have to pay if they want to get the benefits of foreign investments. As long as the world economy becomes more integrated because of improved communication and the rise of multinationals, and at the same time national boundaries still have importance, this dilemma will continue.

In the case of Hong Kong, its openness and the non-discriminatory policy towards foreign firms have proved to be favourable for foreign investments and beneficial to Hong Kong. The MN firms come in as a natural result of market forces, and despite their own characteristics, they have become very much an integral part of the Hong Kong economy. Under these circumstances, many of their allegedly unfavourable effects are non-existent. Our study on MN firms in Hong Kong's electronics industry is particular relevant in this respect.

CHAPTER III

ELECTRONICS INDUSTRY IN HONG KONG

a) Introduction

After going through some theoretical aspects of multinational firms and economic development, this chapter will focus on some background information concerning the electronics industry in Hong Kong. We shall first define the electronics industry and then discuss in detail its growth and expansion of exports by sub-sectors. Following that, there will be a comparison in performance with other industries, and an exploration of the reasons for the rapid development of this industry.

To define what are electronics products is not an easy job. Many products may only contain a small portion of electronics devices. In such cases, these products can fit into a number of categories. Therefore, classifications are quite arbitrary. At the same time, the technological innovation of the electronics industry is so rapid that the definition and coverage of electronics products are changing with time. The basic complication to define the industry is that, as Skinner and Rogers put it, the products in the said industry are not defined by their final products but "centred on a particular science or method of accomplishing a task."[1] Consequently, it is not a surprise that electronics products cannot be clearly classified according to a standard industrial code.

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[1] Skinner & Rogers, Manufacturing Policy in the Electronic Industry, Irwin, 1968, p. 1.

There are two approaches to define the industry. Based on technology, the products can be said to belong to the electronics group when they "utilize in practical applications the principles of the physical science which pertain to the direction and control of electricity in a gas, vacuum, liquid or solid state material."[2] Alternatively, electronics products may also be defined by sector into electronics capital goods, electronics consumer goods, and electronics components.[3] For our practical purposes here, the electronics industry is defined as the combinations of these two approaches, and classified into different sectors with products "applying the movement and property of electrons by utilizing the electron tube and semi-conductors"[4] and components used in the products so defined. Diagram III.1 gives the detailed classification of the products of the electronics industry, which will be used as a reference for our subsequent discussion unless otherwise stated.[5] All the electronics products are broadly grouped into electronics equipment goods, electronics consumer goods and components. The first two groups are final products for the final users, such as consumers, industry and government. The intermediate products for assembly with other parts into products of these two groups are also put into the same group. They are called parts for the equipment goods and consumers goods respectively. Components are distinct parts which are used in the production of intermediate or

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[2]Seev Hirsch, Location of Industry and International Competitiveness, Oxford, 1967, p. 63.

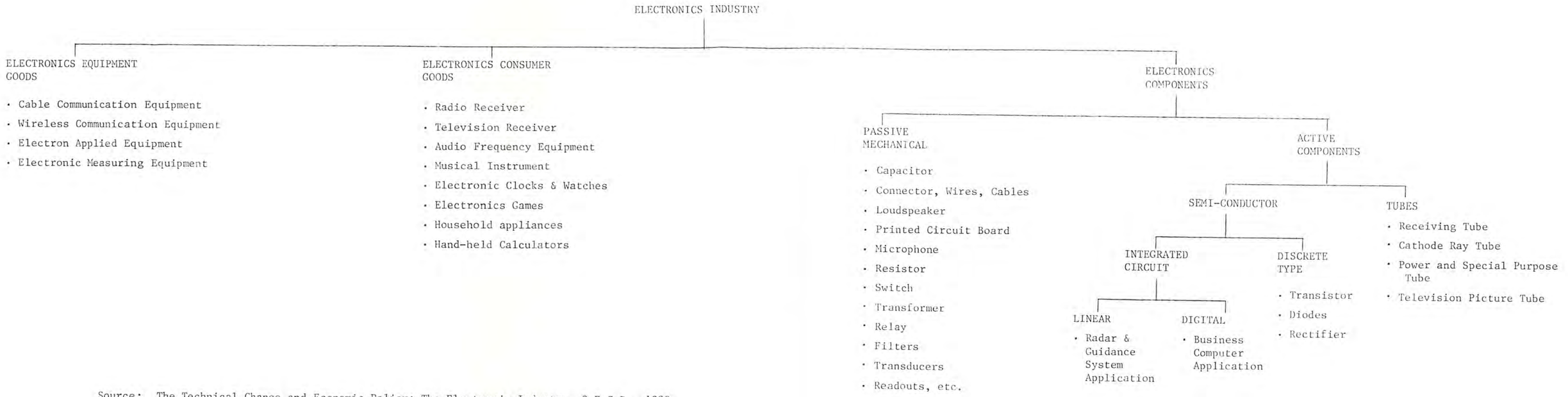
[3]The Technical Change and Economic Policy: The Electronic Industry, pp. 3-6.

[4]K. Yoshihara, op. cit., chapter 5.

[5]For most of the statistics from Census & Statistics Department of the government, the electronics industry is usually referring to transistorized radio, computer parts and components, transistor, diodes, electronics tubes and integrated circuit only. The statistics from Trade, Industry & Customs Department for electronics are taken from the arithmetic sum of the products listed in Hong Kong Trade Statistics — the classification of electronics products are based on common conception.

DIAGRAM III.1

CLASSIFICATION OF THE ELECTRONICS INDUSTRY - BY SECTORS



Source: The Technical Change and Economic Policy: The Electronic Industry, O.E.C.D., 1980.
Skinner & Rogers, Manufacturing Policy in the Electronics Industry, 1968.
Kunio Yoshihara, Japanese Investment in South-east Asia, 1978
Information obtained from direct interview.

Notes: see Footnotes 6.

final products of the above two groups. Components can further be classified into active or passive-mechanical components, and the active components can be sub-divided as shown in the Diagram.

The relationship of the electronics industry with other economic activities is given in Diagram III.2, which shows the boundary and structure of the electronics industry. The flows of the products under different stages of manufacturing is indicated by arrows.

b) Development of the Electronics Industry

It is interesting to note that, in the electronics industry of Hong Kong, consumer products are usually initiated by local firms but components and parts for equipment goods are introduced by foreign firms.[7] This is not difficult to explain as the entrepreneurs in Hong Kong are famous for their flexibility and adaptability. They

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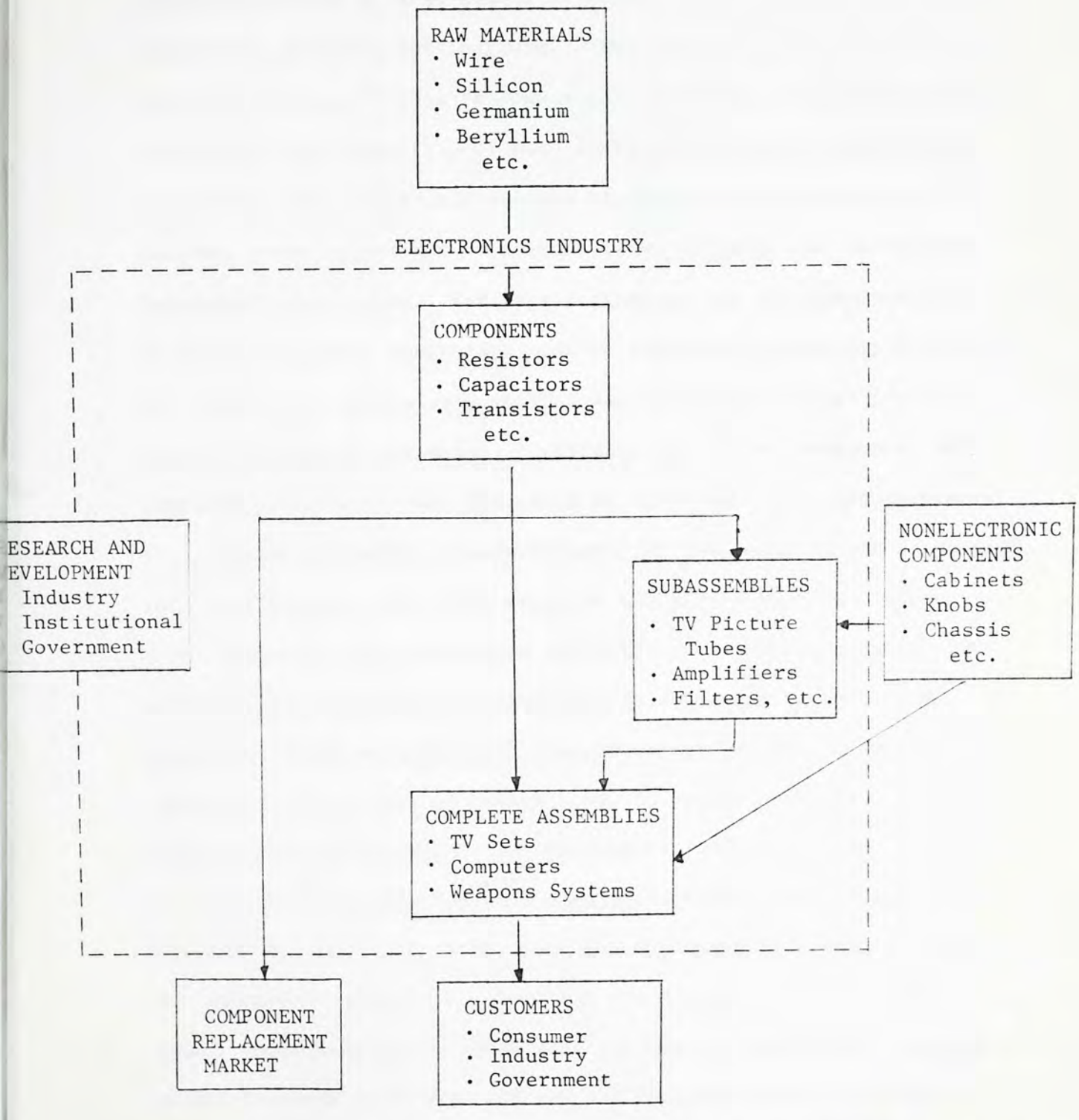
[6]The definition of the products listed in Diagram III.1 are as follows:

i) Cable communication equipments include telegram, telephone equipment, transmission equipment, etc.
ii) Wireless equipment include broadcasting equipment, wireless communication equipment loran, radar, meteorological equipment.
iii) Electron applied equipments include X-ray apparatus, medical electronic device, electronic microscope, computer, electronic desktop calculator, etc.
iv) Passive mechanical components are the devices which modify or aid the flow of electricity in a straight-forward fashion.
v) Active components are the devices involve the emission of electrons and have generally been constructed in two ways.
vi) Electron tubes are the devices exploited the flow of electrons in a vacuum or inert gas to amplify and regulate a flow of electricity.
vii) Semi-conductors are the devices which are able to similarly respond to the state of electric fields and signals by utilising the peculiar behaviour of electrons in solids like silicon which when mixed with minute quantities of other elements, have properties which are half-way between those of electrical conductors and insulators.
viii) Discrete semi-conductors are the devices which simply amplify or regulate flows of electrical current.
ix) Integrated circuits are the devices which use the transistor as a basic building block but combine large numbers of transistors and other devices on a single chip of silicon, so that they perform as a complete electronic circuit or even as a complete system.

[7]Transistorized radio was first initiated by a local Chinese in 1959; electronic calculator in 1968 and electronics watches in 1973. The first semi-conductor plant was U.S. Fairchild in 1962.

DIAGRAM III.2

STRUCTURE OF ELECTRONIC INDUSTRY



Source: Skinner & Rogers, Manufacturing Policy in the Electronics Industry, 1968.

Notes:
1. Components: Discrete parts that are used to manufacture sub-assemblies and complete units.
2. Sub-assemblies: Intermediate products to be assembled with other parts, not necessarily of an electronic nature, before delivery to the consumer.
3. Complete assemblies: Operational devices and systems in the form to be used by the end-users.

always look for the best opportunities based on existing condition. After the period of initiation, the increase in exports in the consumer products attracts a large number of local firms to participate in the production, and many multinational firms also pour in for offensive or defensive reasons.[8] This follows a period of keen competition, resulting in the elimination of many inefficient firms. Another consequence is the rise of manufacture of parts and components for the consumer products, either by multinational firms or the vertically integrated local firms. But, the technology for the manufacturing of parts for active components must be imported by overseas firms who are looking for places with skilled and reasonably priced labor as bases for offshore assembly. Therefore, the active components and computer parts sector are dominated by firms with overseas interest.

Broadly speaking, the development of the industry can be divided into four stages. The first stage is the period when the industry first appeared, from the period 1959-1963. Within the period, the growth of the industry was significantly reflected by the steady expansion in the production of transistorized radios. At that time, Japanese manufacturers of radios tried to set up overseas production sites in Hong Kong, usually in the form of joint-venture or licensing, in order to escape the possible quantitative and floor price restrictions by the U.S. Some U.S. radio manufacturers were also forced by the Japanese competition to look for lower cost offshore assembly areas. Hong Kong in the early 60's was one of the earliest exporters of manufactured goods from LDC and had abundant supply of cheap, versatile and docile workers. The entrepreneurs in Hong Kong were successful in grasping this golden opportunity to develop the electronics industry.

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[8]Here offensive strategy means the making use of the experience developed in Hong Kong to explore in new product lines; while defensive strategy means to maintain and protect the already existing market share both at home and overseas.

Later on, when the U.S. electronics manufacturers turned to produce higher technology equipment goods[9] for the space program and the Vietnam War, Hong Kong was chosen to be the site for the assembly of semi-conductor and core-memory.[10] At the same time, the success of the radio sector had induced many firms to participate, either local or overseas. This is the second stage of development which covered the period from 1964 to 1970 and characterized by extensive participation of overseas interest and further development of the radio sector.

The third stage is the period of product diversification lasting for the entire 70's. The major products emerged were electronic calculators, cassette tape radios, TV receivers, Hi-Fi equipment, TV games and other electronics toys, electronics watches and clocks, etc. At the end of the decade, transistorized radios, electronics watches and clocks, and electronics toys became the three major pillars of the industry.[11] Though the actual figures on the export of electronics toys cannot be separated from other toys and dolls, it is estimated to account for about one-fifth of the total values.[12] Within this period, the share of the multinational firms had begun to decrease steadily in terms of number of establishments, employment and the amount of investment.

The 80's is the new era for the electronics industry in Hong Kong. In the first place, some of the standardized and matured products (say radio) have become costly to manufacture in Hong Kong, causing some of the manufacturers to look for cheaper production

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[9] K. Yoshihara, op. cit., pp. 133-178.

[10] K. Yoshihara, ibid.

[11] Zhang Nien-chung, "The Development and Prospect of Hong Kong Electronics Industry", Taiwan Bank Quarterly Journal, 1981.

[12] 香港經濟年鑑，經濟導報編印。

locations outside.[13] For the time being, the Hong Kong manufacturers of such consumer products can still depend on their adaptability to modify the products to meet world demand, and benefit from their stronger supporting industries in comparison with other neighbouring countries. But these advantages are temporary and may become marginal later on. In the second place, because of the rapid development of other Asian countries, those in the Asian Growth Belt in particular,[14] the demand for the electronics equipment goods expected to become quite substantial in the mid-80s. Parallel with this is the abundance of skilled but reasonably-priced workers and management staff in Hong Kong. As a result, a change in the structure of electronics products, i.e., turning to higher technology equipment goods, is expected.[15] These products include micro/personal computer, tele-communication equipment, office machinery, and the fabrication of wafers.[16]

The performance of the electronics industry can be reviewed from the statistics on export (both values and markets), number of establishment, employment, and the skill level of employees.

i) Export

Table III.1a & b give the export of the industry over the years in value terms and in percentages, broken down into ten major products groups. Before 1975, these ten groups almost accounted for all the export of the industry. In and after 1975,

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[13] L.T. Wells (Jr.), "Foreign Investment from the Third World: the Experience of Chinese Firms from Hong Kong", Columbia Journal of World Business, Spring 1978, pp. 41-42.

[14] M.H. Hsing, A Comparison of Technological Progress of Manufacturing Industries in the United States and the Asian Growth Belt, Economic Research Centre, CUHK, March 1981.

[15] Opinions generally obtained when interviewing the top management of the firms.

[16] In fact, a few wafer fabricating factories are established by 1981. All of them are joint-ventures by local firms and firms representing Chinese interest in Hong Kong.

TABLE III.1a

EXPORT OF MAJOR ELECTRONICS PRODUCTS 1959-1980
(in HK$Mn)

Products \ Year	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
CONSUMERS:																						
Radio receivers (all kinds)			12.7	36.3	68.3	95.1	127.7	184.7	210.0	328.7	472.1	548.8	711.7	918.9	1159.0	1338.0	1293.0	1875.0	2144.0	2247.0	3186.0	3888.0
Electronic calculator													0.9	21.3	97.7	154.9	338.8	356.9	212.6	387.6	549.3	463.5
Cassette tape recorder								0.2	3.2	2.4	--	0.4	5.7	20.1	39.9	64.6	62.2	129.1	180.1	195.4	293.1	316.7
TV receiver							--	--	0.04	0.1	12.1	8.1	1.9	0.2	1.7	9.7	19.0	1.7	3.1	3.7	27.6	59.6
Electronic watches																				1053.4	2256.2	3556.7
EQUIPMENT:																						
Computer parts & components										13.3	27.6	175.3	284.6	279.3	399.3	465.5	340.1	466.7	682.8	678.2	786.6	1465.1
ACTIVE COMPONENTS:																						
Integrated circuit													4.6	48.2	91.0	229.0	163.0	266.0	251.0	303.0	448.0	524.0
Thermionic & electronic valves & tubes						10.7	51.4	120.4	135.0	11.8												
Transistor										136.0	232.0	210.8	187.5	228.4	331.4	314.1	207.5	286.7	314.1	357.0	499.4	545.9
Diodes												48.4	37.6	47.2	56.5	72.6	51.5	64.0	68.0	73.9	94.7	96.9
Total			12.7	36.3	68.3	105.8	179.1	305.3	348.2	492.3	743.8	991.8	1234.5	1563.6	2176.5	2648.4	2475.1	3446.1	3855.7	5299.2	8140.9	10916.4
All Electronics export**																	2757.0	4089.0	4688.0	6446.0	9664.0	12811.0
Total H.K. Domestic Export	2282	2867	2939	3317	3831	4428	5027	5730	6700	8428	10518	12347	13750	15245	19474	22911	22859	32629	35004	40711	55912	68171

Source: Hong Kong Trade Statistics, Census and Statistics Department, Hong Kong, various issues.
Trade, Industry & Customs Department, Hong Kong.

Notes: The S.I.T.C. code for the products are -

	Before 1978	After 1978
Computer parts & components	729982	759902, 759909
Transistor	729301	776302
Diodes	729303	776301
Thermionic & Electronic valves & tubes	729300, 729302	--
Integrated circuit	729304, 729988	776402-3
Electronic calculator	714202	751212-4
Cassette tape recorder	891114-5	763881
TV receiver	724101, 724103	761100, 761200
Radio of all kind	724205, 724201, 724206	762101-2, 762201-2, 762807-9
Electronic watches	--	885111-5

** From Ind. Development Division, T.I.C.D., Hong Kong.

TABLE III.1b

EXPORT OF MAJOR ELECTRONICS PRODUCTS - BY GROUPS
(in percentage)

Products \ Year	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Consumer products			100.00	100.00	100.00	89.89	71.30	60.56	61.24	67.28	65.10	56.19	58.34	61.43	59.65	59.18	69.21	68.56	65.87	73.35	77.54	75.89
Equipments										2.70	3.71	17.67	23.05	17.86	18.35	17.58	13.74	13.54	17.71	12.80	9.66	13.42
Active components						10.11	28.70	39.44	38.77	30.02	31.19	26.13	18.61	20.71	22.00	23.25	17.05	17.90	16.42	13.85	12.80	10.69
All electronics* major products			100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00 (89.78)	100.00 (84.28)	100.00 (82.25)	100.00 (82.21)	100.00 (84.24)	100.00 (85.21)
Electronics export as share of total domestic export			0.43	1.09	1.78	2.39	3.56	5.33	5.20	5.84	7.07	8.03	8.98	10.26	11.18	11.56	12.06	12.53	13.39	15.83	17.28	18.79

Source: From Table III.1a

Notes: *The percentages show the relative shares of consumer products, equipments and active components in total major electronic products identified in Table III.1a.
Percentages in parentheses are the shares of these major products in total electronics exports.

as the industry has become more diversified and many components and parts manufacturers have been introduced, the sum of these ten groups only represents part of total exports, though still a predominant portion.

Products belonging to the consumer group usually share more than two-thirds of the total export, except for the period 1970-1974 when the American economy suffered from the Vietnam War, the dollar crisis and later the oil crisis. Among them, the most important item is transistorized radio, though its weight is decreasing over time.

TABLE III.1c

EXPORT SHARE OF TRANSISTORIZED RADIO

	1963	1970	1975	1980
Shares in listed consumer products	100.0%	98.5%	84.6%	46.9%
Shares in total electronics	100.0%	55.3%	46.9%	30.4%

Source: From Table III.1a

The assembly of electronic watches started production in 1973 by a local watch company. It was only until 1978 that its exports figure can be separated from other watches. The sector experiences rapid development: in a period of less than ten years, the production of electronic watches in Hong Kong has gone through four generations.[17] In 1980, electronic watches accounted for a share of 27.8% in total electronics export and

[17] The four generations are: the LED digital watch (light emitting diode), the LCD digital watch (liquid crystal display), LCD digital analog or quartz analog, and the multifunctions electronics watches.

Hong Kong became the world's largest exporter of electronic watches in quantity.[18] Strong supporting industries in watch belt, watch cases and other watch parts have contributed to its rapid growth. However, keen competition from producers in the same lines, the fact that vital parts are not manufactured in Hong Kong (say the chips), the spiral increase in cost of production, and probable quota restrictions[19] have made the prospect of this sector much gloomy.

Because of classification problems, the statistics for electronics toys cannot be given. It is said that the production of electronics toys came to existence in the mid-70s, and by now the sector has a 25% share in Hong Kong's export of toys and dolls, the world largest exporter since 1975.[20]

Computer parts and components production was introduced in the mid-60s by U.S. firms. Products mainly consist of core-memory systems, computer peripherals and printed circuit boards for computers. Export expands continuously and maintain roughly at 10-20% of Hong Kong's export of electronics products. There is a new trend that many companies are trying to manufacture whole computers in Hong Kong.

The export of active components followed immediately the establishment of MN firms in the mid-60s. Because of technological

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[18] In fact, the electronics watches export have exceeded U.S. and Japan to be the largest exporter of electronic watches in quantity since 1978.

[19] In February, 1982, France unilaterally declares quota restriction on the Hong Kong export of electronics watches to French market.

[20] (香 港 經 濟 年 鑑), 1975-1980.

improvement, the thermionic and electronic valves and tubes became outdated and production stopped in late 60's. Production was then shifted to transistors, diode and integrated circuits. Although exports expand in value terms over years, the share to total export is found to decrease continuously since 1974, from 23.25% down to 10.69%.

ii) Markets

Though production statistics for the electronics industry are not complete enough to give exact figures on the share of the local market, it is estimated that over 90% of the production are for exports.

Table III.2a, b, c, d give the major markets of the industry over the years — for the industry as a whole or by types of customers.

The U.S. has always been Hong Kong's largest market, no matter in the consumer, equipment or components products. The share of U.S. market reached its peak in late 60s but had declined since then. The decrease in share was particularly clear in the consumer sector, from 71.0% in 1969 to only 29.3% in 1979. Active components also showed sign of monotonic decrease, from the high level of 96.3% in 1964 down to only 49.9% in 1979. Nevertheless, for the computer parts and components sector, the U.S. is found to dominate the market share from the beginning.

The U.K. was once Hong Kong's greatest market for electronic products before 1964. Then, her percentage share was found to decrease sharply in the 60's and reached its trough in the turn of the 70s, after which her share began to increase again. By 1979, U.K. was found to be the third (10.4%) largest market, next only the U.S. and W. Germany. She accounted for only a

TABLE III.2a

MAJOR MARKETS FOR ELECTRONIC PRODUCTS
(in %)

Country/Year	1964	1969	1974	1979
U.S.	53.9%	75.3%	55.6%	37.5%
U.K.	33.1%	4.0%	6.6%	10.4%
F.R. Germany	1.5%	4.0%	6.9%	15.3%
France	0.2%	0.1%	1.4%	2.5%
Italy	0.7%	1.6%	1.4%	2.7%
Switzerland	0.2%	1.0%	1.0%	2.3%
Netherland	0.8%	1.0%	3.3%	4.5%
Japan	--	3.6%	1.5%	2.2%
Canada	2.6%	1.7%	2.4%	1.8%
Australia	0.1%	--	3.0%	1.6%
Panama	1.2%	1.0%	1.2%	1.7%
Singapore	0.7%	0.2%	1.1%	1.9%
Other countries	5.0%	6.5%	14.6%	15.6%
All countries	100%	100%	100%	100%

Source: Hong Kong Trade Statistics, Census and Statistics Department, Hong Kong, various issues.

TABLE III.2b

MAJOR MARKET FOR CONSUMER ELECTRONICS
(in %)

Country/Year	1964	1969	1974	1979
U.S.	49.0%	71.0%	42.7%	29.3%
U.K.	36.7%	5.1%	7.9%	12.4%
F.R. Germany	1.7%	6.0%	11.7%	17.9%
France	0.2%	0.1%	1.7%	3.0%
Italy	0.7%	1.8%	2.0%	3.4%
Switzerland	0.2%	1.5%	1.7%	2.9%
Netherland	0.8%	1.5%	3.4%	4.2%
Canada	2.8%	2.7%	3.9%	2.3%
Panama	1.4%	1.6%	2.1%	2.2%
Other countries	6.5%	8.7%	22.9%	22.4%
All countries	100%	100%	100%	100%

Source: Hong Kong Trade Statistics, Census and Statistics Department, Hong Kong, various issues.

TABLE III.2c

MAJOR MARKET FOR ELECTRONIC COMPUTER PARTS & COMPONENTS
(in %)

Country/Year	1964	1969	1974	1979
U.S.	--	92.4%	78.1%	86.9%
U.K.	--	7.2%	4.9%	2.3%
F.R. Germany	--	--	3.0%	1.1%
France	--	--	1.7%	2.1%
Italy	--	--	0.9%	0.7%
Japan	--	0.4%	2.9%	0.9%
Singapore	--	--	0.3%	0.1%
Other countries	--	--	8.2%	5.9%
All countries	--	100%	100%	100%

Source: Hong Kong Trade Statistics, Census and Statistics Department, Hong Kong, various issues.

TABLE III.2d

MAJOR MARKET FOR ELECTRONIC ACTIVE COMPONENTS
(in %)

Country/Year	1964	1969	1974	1979
U.S.	96.3%	82.3%	71.6%	49.9%
U.K.	0.9%	1.3%	4.6%	4.8%
F.R. Germany	--	0.5%	3.9%	9.8%
France	--	--	0.6%	--
Italy	--	1.3%	--	--
Netherland	--	0.1%	5.7%	9.7%
Japan	--	11.5%	2.8%	5.1%
Canada	--	--	0.4%	0.5%
Australia	--	--	0.5%	0.6%
Singapore	1.9%	0.1%	2.9%	6.7%
Other countries	0.9%	2.9%	7.0%	12.9%
All countries	100%	100%	100%	100%

Source: Hong Kong Trade Statistics, Census and Statistics Department, Hong Kong, various issues.

small portion in Hong Kong's export of computer parts and active components. The share of F.R. Germany was found to increase steadily in both the consumer and active components sectors. By 1979, W. Germany ranked second as Hong Kong's market in electronics, with a share of 15.3%. The other Western European countries, notably, Netherland, France, Italy, Switzerland, etc. also witnessed increase in shares. It is interesting to note that their increases in shares were concentrated in the consumer products, much less in the active components and totally not the case in the computer parts and components. In 1979, the total of these European countries had a share of 37.7%, which was marginally greater than that of the U.S. at 37.5%.

It is clear that the export of this industry is mainly for the developed countries. Countries classified as major markets and belonging to the less developed group are only Singapore and Panama, but they only have a small share. There is also a trend towards diversification in the export markets. The percentage share accounted for by the major markets are found to decrease continuously. In 1979, Hong Kong electronics products were exported to more than a hundred countries.

iii) Employment and skill level

Table III.3 gives the number of employment in the industry. While the absolute number of employment increase steadily over the years, the share of female workers are found to decrease continuously. The phenomenon can be explained by a general increase in the skill level of the workers. Usually, male workers are higher in skill.

If the technologist, technician and craftsman in Tables III.3 a, b, c are classified as skilled workers against the group of

TABLE III.3

EMPLOYMENT STATISTICS OF ELECTRONICS INDUSTRY

Year	Total	Male (%)	Female (%)
1966	20,322	13.6	86.4
1970	32,597	18.2	81.8
1974	48,960	25.0	75.0
1976	58,854	26.5	73.5
1978	69,161	28.1	71.9
1980	92,968	32.8	67.2

Source: Electronic Industry, Manpower Survey Reports, Electronic Industry, Training Board, Hong Kong Training Council, Hong Kong, various issues.

TABLE III.3a

SKILL LEVEL OF ELECTRONIC EMPLOYEE - TOTAL
(1966-1980)

Year	Total No.	Technologist	Technician	Craftsman	Operation & Unskill
1966	20,322	--	4.55%	7.28%	88.17%
1970	32,597	--	5.46%	12.27%	82.27%
1974	48,960	1.55%	6.26%	16.72%	75.47%
1976	58,854	1.80%	5.52%	9.67%	83.01%
1978	69,161	2.53%	6.72%	10.14%	80.61%
1980	92,968	2.45%	10.69%	10.03%	76.84%

Source: Same as Table III.3.

Notes:
1. A technologist is a person who applies his professional skills to a wide range of engineering activities.
2. A technician is a person who performs technical duty normally under the supervision of a technologist.
3. A craftsman is a worker who can apply his skills to a wide range of jobs within his crafts.
4. Operative is a semi-skilled worker who engages in repetitive production work which requires a restricted range of skills.

(Source: the 3rd manpower survey, August 1974).

TABLE III.3b

SKILL LEVEL OF ELECTRONIC EMPLOYEE - MALE

Year	Total No.	Technologist	Technician	Craftsman	Operation & Unskill
1966	2,768	--	28.54%	31.29%	40.17%
1970	5,919	--	25.43%	32.05%	42.52%
1974	12,257	6.16%	21.67%	37.93%	34.24%
1976	15,604	6.68%	18.75%	25.49%	49.08%
1978	19,406	8.80%	20.92%	27.02%	43.26%
1980	30,501	7.27%	29.90%	20.72%	42.11%

Source: Same as Table III.3.

TABLE III.3c

SKILL LEVEL OF ELECTRONIC EMPLOYEE - FEMALE

Year	Total No.	Technologist	Technician	Craftsman	Operation & Unskill
1966	17,554	--	0.76%	3.50%	95.74%
1970	26,678	--	1.03%	7.88%	91.09%
1974	36,703	0.01%	1.12%	9.64%	89.24%
1976	43,250	0.03%	0.75%	3.97%	95.25%
1978	49,755	0.09%	1.18%	3.56%	95.17%
1980	62,467	0.10%	1.31%	4.81%	93.79%

Source: Same as Table III.3.

operation and unskilled, the skilled workers only share a small portion. Within the skilled workers, there is some indication of shifting to the upper end, but the improvement in skill level over the years was very slow. For the female workers, the portion of operation and unskilled is at an overwhelming 90% or more. Even for the male, the portion is still as high as above 40%.

This indicates that the many-fold increase in sales does not bring in the increase in the skill level at the same pace, implying that the expansion of the industry is mainly horizontal. While the trend of change to higher technology products is obvious, some adjustment problems are expected in the absence of corresponding change in skill level.

c) Compared with Other Industries

The growth of the electronics industry in comparison with the other manufacturing sectors can be evaluated in the following aspects.

i) Export performance

The export performance of the major industries are presented in Tables III.4a, b.[21] Obviously, the clothing and textile industry, being the number one foreign exchange earner, is most important in Hong Kong. However, for the two period 1966-70 and 1976-80, its average growth rate is found to be much less than that of Hong Kong's overall exports. As a result, its average share to total exports were found to decrease over time. These phenomena cast some doubts on the prospect of the clothing and textile sector.

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[21] According to TICD, the values for each industry may have some double counting, for example, electronics watches and clocks are classified in watches and clocks industry as well as in the electronics industry, electronics toys and dolls in toys and dolls, and in the electronics as well. The purpose of these figures are for illustration only.

TABLE III.4a

EXPORT PERFORMANCE OF MAJOR INDUSTRIES (HK$ Mn)

Year	Clothing & Textile	Electronics	Plastic Products	Watches & Clocks	Toys & Dolls	Electrical Products	Total Export
1966	2,956	305	674	25	455	291	5,730
1967	3,253	348	832	43	556	380	6,700
1968	4,049	492	1,030	69	760	294	8,428
1969	4,954	789	1,213	108	887	326	10,518
1970	5,614	992	1,396	135	1,044	310	12,347
1976	17,339	4,089	3,375	1,208	2,371	819	32,629
1977	16,557	4,688	4,027	1,693	3,042	1,148	35,004
1978	18,578	6,446	4,326	2,733	3,348	1,507	40,711
1979	24,196	9,664	5,738	4,354	5,156	2,394	55,912
1980	27,793	12,811	6,501	6,288	5,944	3,571	68,171

Sources: Industrial Development Division, Trade, Industries and Customs Department, Hong Kong.
Hong Kong Trade Statistics, Census and Statistics Department, Hong Kong, various issues.

TABLE III.4b

EXPORT PERFORMANCE OF MAJOR INDUSTRIES - GROWTH RATE & EXPORT SHARE

	Year	Clothing & Textile	Electronics	Plastic Products	Watches & Clocks	Toys & Dolls	Electrical Products	Total Export
Average Annual Growth Rate	1966-70	17.4%	34.3%	20.0%	52.4%	23.1%	1.6%	21.2%
	1976-80	12.5%	33.0%	17.8%	51.0%	25.8%	44.5%	20.2%
Average Share To Total Exports	1966-70	48.2%	6.4%	11.8%	0.8%	8.4%	4.0%	
	1976-80	46.0%	15.6%	10.5%	6.5%	8.4%	3.8%	
	1980	40.8%	18.8%	9.5%	9.2%	8.7%	5.2%	

Source: From Table III.4a.

The watches and clocks industry witnessed the highest growth rate as well as the increase in the share of exports over the two periods. The trend of its development can safely give an impression of optimistic forecast; however, it must be mentioned that the growth of the industry in the second period is to a large part due to the growth of electronics watches and clocks. Note also that similar phenomenon happened in the toys and dolls industry, the performance of which is also above the average.

It is reasonable to believe that electronics industry has higher potential than many other industries. As reviewed from exports, the electronics industry has experienced remarkably higher average annual growth rate, especially in the recent years, and its share to total export is increasing all the time. Besides, the more diversified nature of its products implies that quota restrictions and other means of trade barrier cannot be easily applied to the electronics industry. Furthermore, the ever improvement in technology makes it much more difficult for the other less developed countries to compete with Hong Kong.

ii) Productivity, average size and share of value-added

Table III.5a, b give the principal production statistics of the manufacturing establishments in Hong Kong by industry groups – for the years 1973 and 1978. Here electrical and electronics products are grouped together to compare with other sectors. The percentage of the number of establishments of the electrical and electronics products industries had only a small share and showed only some relative increase over the years. In the areas concerning the number of persons engaged, gross output, and census value-added,[22] electrical and electronics products only

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[22]Census value-added is a concept sometimes used in economic censuses which differs from national accounts value added basically

TABLE III.5a

PRINCIPAL STATISTICS OF MANUFACTURING BY INDUSTRY GROUP (1973 & 1978)

Industries Group	Establishment		Persons Engaged		Gross Output (HK$'000)		Census Value-Added (HK$'000)	
	1973	1978	1973	1978	1973	1978	1973	1978
Food, Beverages & Tobacco	825	818	16285	19086	1332114	2836992	494162	1169890
Textile (including knitwear)	3010	3910	118827	117437	8517835	12175726	2951047	3578067
Wearing Apparel, except knitwear & footwear	3411	6997	145652	246589	6383129	15417129	2156210	5593417
Leather, wood & cork products	1496	2610	16721	25685	874761	1642647	346184	644148
Paper products, printing & publishing	1748	3051	25359	34159	1296361	2585654	568732	1096498
Chemicals, rubber & non-metallic mineral products	691	1054	14953	15550	837965	2248823	332938	759679
Plastic products	3255	3517	70666	78491	2432948	4586901	998052	1898514
Basic metal, fabricated metal products, machinery & equipment	4788	8049	84544	132640	3520678	10923714	1567020	3674397
Electrical & electronic products	617	1218	68707	94694	3232145	8999272	1023782	2704234
Other manufacturing industries	794	2265	14556	30060	994877	2312083	356968	819156
All manufacturing industries	20635	33489	576270	794391	29422811	63728940	10795091	21938000

Source: Hong Kong Monthly Digest of Statistics, Census and Statistics Department, Hong Kong, various issues.

TABLE III.5b

PRINCIPAL STATISTICS OF MANUFACTURING BY INDUSTRY GROUP - PERCENTAGE SHARE (1973 & 1978)

Industries Group	Establishment		Persons Engaged		Gross Output		Census Value-Added	
	1973	1978	1973	1978	1973	1978	1973	1978
Food, Beverages & Tobacco	4.0	2.4	2.8	2.4	4.5	4.5	4.6	5.3
Textile (including knitwear)	14.6	11.7	20.6	14.8	28.9	19.1	27.3	16.3
Wearing apparel, except knitwear & footwear	16.5	20.9	25.3	31.0	21.7	24.2	20.0	25.5
Leather, wood & cork products	7.2	7.8	2.9	3.2	3.0	2.6	3.2	2.9
Paper products, printing & publishing	8.5	9.1	4.4	4.3	4.4	4.1	5.3	5.0
Chemicals, rubber & non-metallic mineral products	3.3	3.1	2.6	2.0	2.8	3.5	3.1	3.5
Plastic products	15.8	10.5	12.3	9.9	8.3	7.2	9.2	8.7
Basic metal, fabricated metal products, machinery & equipment	23.2	24.0	14.7	16.7	12.0	17.1	14.5	16.7
Electrical & electronic products	3.0	3.6	11.9	11.9	11.0	14.2	9.5	12.3
Other manufacturing industries	3.8	6.8	2.5	3.8	3.4	3.6	3.3	3.7
All manufacturing industries	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Sources: From Table III.5a

rank fourth, following the wearing apparel, textile, and (non-electrical) machinery and equipment industries. From the statistics, there is also some relative increase in terms of output and value-added.

Table III.6 tries to compare across industries their average size, productivity, and share of value-added in gross output. The average size (measured by number of employee per establishment) for the electrical and electronics industry is by far the largest, exceeding the second place apparel industry by more than two times. This indicates that firms in this industry is in general larger in size and involve more workers in production. This phenomenon is expected, since the industry has extensive foreign participation, and engage in large scale assembly operations. However, the average size is found to decrease by 30% in 1978 comparing with the 1973 figure, probably due to rapid growth of the smaller scale local firms.

Productivity (measured by census value-added per employee) for the industry is at a very low level. In fact, it was nearly the lowest in 1973 and only increased to a level a bit higher than the average in 1978. The low value in productivity was due to low level of value-added for the industry or many low wages workers were working in the industry. As it can be seen that the industry has high raw material contents and a great portion of workers were at the operative level, the low value in productivity should not be a surprise.

Another indicator is the share of value-added to gross output. Again the electrical and electronics industry is found

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by its inclusion of payments for rent and rates and for non-industrial services such as advertising, transportation and communication, and other business and professional services.

TABLE III.6

COMPARISON OF AVERAGE SIZE, PRODUCTIVITY & SHARE OF VALUE-ADDED BY INDUSTRY GROUP
(1973 & 1978)

INDUSTRIES GROUP	AVERAGE SIZE (person/est.)		PRODUCTIVITY (per capita value-added)		SHARE OF VALUE-ADDED IN OUTPUT (value-added/gross output x 100%)	
	1973	1978	1973	1978	1973	1978
Food, Beverages & Tobacco	19.7	23.3	30.3	61.3	37.0%	41.2%
Textile (including knitwear)	39.5	30.0	24.8	30.5	34.6%	29.4%
Wearing apparel, except knitwear & footwear	42.7	35.2	14.8	22.7	33.8%	36.3%
Leather, wood & cork products	11.2	9.8	20.7	25.1	39.6%	39.2%
Paper products, printing & publishing	14.5	11.2	22.4	32.1	43.9%	42.4%
Chemicals, rubber & non-metallic mineral products	21.6	14.8	22.3	48.9	39.7%	33.8%
Plastic products	21.7	22.3	14.1	24.2	41.0%	41.4%
Basic metal, fabricated metal products, machinery & equipment	17.7	16.5	18.5	27.7	44.5%	33.6%
Electrical & electronic products	111.4	77.7	14.9	28.6	31.7%	30.0%
Other manufacturing industries	18.3	13.3	24.5	27.3	35.9%	35.4%
All manufacturing industries	27.9	23.7	18.7	27.6	36.7%	34.4%

Sources: From Table III.5a

to be the lowest in 1973, and nearly the lowest in 1978. Looking from the meaning of census value-added, these results show that payments to wages, profit and rent are quite small. If it can be proved that most of the raw materials are imported from outside, then the conclusion will be that the primary effective benefits of the industry to the economy is quite small. However, since the electrical and the electronics industries are grouped together, the results obtained from the above analysis must be accepted with reservation.

iii) Skill level of the employees

In comparing the skill level as shown in Table III.7, it is found that electronics is the industry having largest shares in technologists, and technicians. This phenomenon is consistent with common expectation since electronics is the industry based on scientific innovation. However, the industry also has the largest share in the semi-skilled operatives, showing that large parts of the production work are simple repetition — the low skill assembly work.

d) Summary and Conclusion

In the past two decade, the electronics industry in Hong Kong is developing rapidly. The most significant indicator for its growth is the expansion in export figures. The diversification of products and the improvement in quality have made the industry growing further. At the same time, diversification is also found in export markets, making the industry less vulnerable to fluctations of individual markets. The number of establishment and the employment figures have multiplied in the same pace as its export. However, the skill level of the employees does not move up accordingly showing that the growth pattern of the industry have been mainly horizontal.

TABLE III.7

DISTRIBUTION BY SKILL LEVEL IN SELECTED MANUFACTURING INDUSTRIES
1976-1978 (%)

Skill Level	Electronics	Clothing	Textiles	Plastics	Machine Shops & Metal Working
Technologist	2.5	1.2	1.2	0.2	0.6
Technician	6.7	4.8	5.8	5.7	5.0
Craftsman	10.1	1.7	15.3	5.4	31.5
Semi-skilled operative	79.4	78.6	59.6	29.5	26.8
Unskilled	1.2	13.8	16.6	59.2	36.1
Total	100.0	100.0	100.0	100.0	100.0

Source: Report of the Advisory Committee on Diversification 1979, Hong Kong, p. 62.

The export performance of the electronics industry is remarkably good in compared with other industries. The skill level of the employees is also found better than many other industries, but production is mainly the repetitive assembly work. The firms have much more employees but lower in productivity when comparing with other industries. A distinct characteristic for the industry is its high materials content contributing to the output values. As large parts of raw materials are imported from outside, the margin of the real benefits of the industry to the economy may not be very great. Furthermore, unless electronics industry can successfully induce parts and components manufacturing in Hong Kong, and at the same time, can raise the skill level of the employees, the growth of the industry may not be as smooth as the previous years when a structural change for the industry is called for.

The reasons for the rapid development of the industry are well-known. The availability of cheap and efficient labor, the good infrastructure and communication network, the non-intervention policy of the government, the flexible and alert entrepreneurs, a good timing for development, the participation of foreign interest, and so on — all of these are good reasons. While most of these favourable factors are common to all manufacturing sectors in Hong Kong, there is at least one factor with particular perspective. As hinted throughout the chapter, foreign investment is of special importance to the electronics industry. MN firms are found to be the prime mover of the growth of this emerging and developing industry. Electronics is the industry with largest overseas participation in Hong Kong's manufacturing sector. And, MN firms are the change agents for the industry, introducing a package of products, new technology and management mix. Therefore, the relationship between the development of the electronics industry and the MN firms will be the subject of discussion in the following chapter.

CHAPTER IV

OVERSEAS INVESTMENTS IN HONG KONG'S ELECTRONICS INDUSTRY

a) Introduction

After reviewing the growth of the electronics industry in Hong Kong, this chapter will emphasize in the relationship between its development and the investments made by multinational firms.

It has been pointed out by many economists[1] that the industrialization of Hong Kong depends rather insignificantly on foreign participation in the initial stage. It was not until the industrialization process of the colony had reached a certain level in the mid-60s that foreign interests became important. There were favourable factors internal to the colony: Hong Kong started off as a sea-port in a strategic location, had a good foundation in banking, communication, insurance, warehouse services, port facilities and other relevant experiences learnt in its long history of entrepot trade,[2] even before industrialization took place. The abrupt decline in entrepot trade in the early 50s because of Korean War and the subsequent resolution by the United Nations for trade embargo on China had driven Hong Kong to an export-or-die position. The determination to export its manufactured goods was encouraged by the injection from mainland and

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[1] This viewpoint can be found from Lin & Mok, Trade, Foreign Investment and Development in Hong Kong, (mimeo.), Chinese University of Hong Kong, 1982, p. 34; also from J. Riedel, The Industrialization of Hong Kong, J.C.B. Mohr, Tubingen, 1974, p. 113; as well as from T. & F.M. Geiger, Tales of Two Cities States: the Development Progress of Hong Kong & Singapore, National Planning Association, p. 75.

[2] J. Riedel, ibid., p. 5.

overseas Chinese an abundant supply of cheap labor, capital and entrepreneurs at the right time. The overall external climate also favoured the export of labor intensive manufactured goods from the LDC.[3] When Hong Kong had successfully developed its traditional industries, foreign investments were attracted to this colony. Even then, the percentage of firms with overseas interests were found to be less than 1% of the total manufacturing establishments.[4]

The purpose of this chapter is to establish a point that, though foreign investments may be insignificant to the overall industrialization process, it is not true in the case of electronics industry in Hong Kong. Although many electronics products were locally initiated, it is fair to say that the industry was shaped and virtually brought into the economy by foreign investments.

The above description begs an answer for a fundamental question: What are the foreign firms?[5] The definition of foreign firms is quite ambiguous. As Hong Kong is under British rule for more than a century, should the British-owned firms now and then, be classified as foreign? The same question is raised for the firms of Chinese interests as the people and the economy at large are so closely related with China. If the capital injected to Hong Kong shortly after 1949 from mainland and overseas Chinese are considered as foreign, then the contribution of foreign capital to industrialization is very substantial indeed.[6] In

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[3] Lin & Mok, Trade Barriers and the Promotion of Hong Kong Exports, The Chinese University Press, Hong Kong, 1980, p. 3.

[4] Lin & Mok, Trade, Foreign Investment and Development in Hong Kong, (mimeo.), Chinese University of Hong Kong, 1982, p. 35. In 1960 overseas firms only share 0.6% of all manufacturing establishments, only 0.9% in 1970 and constantly maintain at 1.0% level since then.

[5] The same question is also raised by Lin & Mok, ibid., p. 32.

[6] Riedel, op. cit., p. 112 and by Lin, Mok & Ho, Manufactured Exports and Employment in Hong Kong, Chinese University Press, 1980, p. 10.

Hong Kong, the term "overseas investment" is used by the Trade, Industry & Customs Department, instead of "foreign investments". The definition of overseas investments is not explicitly written down; in principle, all investments from places outside Hong Kong, including U. K. are classified as overseas investments. The investments from mainland China are not easily separated out and thus not included in the category of overseas investments. For the convenience of subsequent analysis and as the discrepancy is expected to be small, the terms overseas investments is regarded the same as the foreign investments throughout the whole chapter. A further simplification is made to assume all the foreign investments in Hong Kong's electronics industry are coming from the multinational firms — this assumption is quite realistic as revealed from the survey to be presented in the next chapter.

Some limitations on the study of foreign firms must be mentioned. The detailed statistics on capital flow are just not available and the separation of direct investment and portfolio investment is simply impossible. Concerning the statistics on overseas investments, it must be borne in mind, firstly, that the amounts of investments are only the algebraic sum of amounts reported to TICD by the firms when they first came to Hong Kong, no adjustments for later expansion and revaluation are made. Secondly, in the case of joint-venture, the amounts of local interests are excluded but this is not consistent with the statistics on employment and output which are added up for all the firms with overseas interests. Besides, as all figures are obtained from the survey on overseas firms on a voluntary basis, the data are expected to be incomplete or not so accurate.

b) Performance of Overseas Electronics Firms

i) Compared with overseas investments in other industries

The significant inflow of overseas investments to Hong Kong

was found starting in the 60's which overlapped with the time of the development of the electronics industry. One implication for this coincidence was that many investments at that time were concentrated in the electronics sector, and contributed greatly to the development process. Apart from this, a closer observation reveals that the overseas electronics establishments were mainly U.S. or Japanese multinational firms with much larger scale of production. Their investments had important consequences in the employment opportunities, the spread of industry through spill-over effect, and the broadening of the industrial base in Hong Kong.

Bearing in mind the qualifications as mentioned in section a), the overseas investments in electronics industry can be compared with the other manufacturing industries. The figures before the 70's are not available but it is believed that the portion of electronics do share a significant fraction. Table IV.1 gives the distribution of overseas firms in Hong Kong's manufacturing sector from 1973 to 1980. The number of electronics establishments, though decreasing in shares, constantly ranked second in all manufacturing, next only to the textiles industry. The average rate of growth was much lower in this period in comparison with the other industries showing a gradual shift of foreign investments to the other sectors over the years.

In terms of employment figures, as shown in Table IV.2, electronics industry was the largest though the trend is also downward. In 1973, the electronics sector nearly absorbed half of the employees in all foreign firms, but in 1980, the fraction was cut down to one-third. The absolute figure of employment was found to level off since 1977, showing little expansion of

DISTRIBUTION OF OVERSEAS FIRMS IN HONG KONG' MANUFACTURING SECTION
(in number of firms)

Industry	1973	1974	1975	1976	1977	1978	1979	1980	Average Rate of Growth
Electronics	48 (22.9)	52 (22.0)	58 (22.7)	59 (20.4)	64 (18.9)	68 (17.6)	72 (16.9)	75 (16.3)	8%
Textiles	56 (26.7)	59 (25.0)	65 (25.5)	71 (24.6)	87 (25.7)	95 (24.6)	100 (23.4)	105 (22.8)	12%
Chemicals	8 (3.8)	11 (4.7)	11 (4.3)	11 (3.8)	13 (3.8)	19 (4.9)	22 (5.2)	23 (5.0)	27%
Electrical Products	8 (3.8)	10 (4.2)	13 (5.1)	18 (6.2)	21 (6.2)	25 (6.5)	29 (6.8)	34 (7.4)	46%
Printing & Publishing	6 (2.7)	8 (3.4)	8 (3.1)	8 (2.8)	9 (2.7)	10 (2.6)	12 (2.8)	12 (2.6)	14%
Watches & Clocks	10 (4.8)	17 (7.2)	18 (7.1)	22 (7.6)	25 (7.4)	27 (7.0)	33 (7.7)	41 (8.9)	44%
Food Manufactures	4 (1.9)	4 (1.7)	6 (2.4)	10 (3.5)	14 (4.1)	17 (4.4)	17 (4.0)	18 (3.9)	50%
Metal Products	9 (4.3)	12 (5.1)	12 (4.8)	18 (6.2)	26 (7.7)	30 (7.8)	32 (7.5)	34 (7.4)	40%
Toys	8 (3.8)	7 (3.0)	7 (2.7)	9 (3.1)	10 (2.9)	11 (2.8)	12 (2.8)	11 (2.4)	5%
Metal Rolling, Extrusion, etc.	4 (1.9)	4 (1.7)	4 (1.6)	5 (1.7)	5 (1.5)	5 (1.3)	6 (1.4)	6 (1.3)	7%
Bldg. & Construction Materials	4 (1.9)	4 (1.7)	4 (1.6)	5 (1.7)	5 (1.5)	5 (1.3)	5 (1.2)	5 (1.1)	4%
Others	45 (21.4)	48 (20.3)	49 (19.2)	53 (18.3)	60 (17.7)	74 (19.2)	87 (20.3)	96 (20.9)	16%
Total*	210 (100.0)	236 (100.0)	255 (100.0)	289 (100.0)	339 (100.0)	386 (100.0)	427 (100.0)	460 (100.0)	17%

Source: Trade, Industry & Customs Department, Hong Kong. (As adapted from Lin & Mok, "Trade, Foreign Investment and Development in Hong Kong", (mimeo.), The Chinese University of Hong Kong, 1982, Table 14)

Notes: *Some others are known but no detailed information available.

TABLE IV.2

EMPLOYMENT IN OVERSEAS FIRMS IN H.K.
(in thousands of employees)

Industry	1973	1974	1975	1976	1977	1978	1979	1980
Electronics	30.2 (48.0)	23.4 (41.2)	24.3 (41.3)	24.6 (39.0)	29.6 (39.6)	29.8 (37.6)	30.9 (37.0)	28.9 (33.1)
Textiles	9.7 (15.4)	10.3 (18.1)	11.0 (18.6)	13.5 (21.5)	17.2 (23.0)	17.7 (22.4)	18.6 (22.3)	22.1 (25.3)
Chemicals	0.7 (1.1)	0.7 (1.2)	0.6 (1.1)	0.7 (1.2)	0.6 (0.8)	0.8 (1.0)	1.1 (1.4)	1.2 (1.3)
Electical Products	3.9 (6.2)	4.0 (7.0)	4.0 (6.8)	4.2 (6.7)	4.9 (6.6)	5.2 (6.6)	5.6 (6.7)	6.1 (7.0)
Printing & Publishing	1.2 (1.8)	1.2 (2.1)	1.2 (2.0)	1.2 (1.9)	1.8 (2.4)	1.9 (2.3)	2.0 (2.4)	2.0 (2.3)
Watches & Clocks	4.9 (7.7)	5.1 (8.9)	5.0 (8.6)	5.6 (8.9)	4.9 (6.5)	5.0 (6.3)	6.3 (7.5)	7.2 (8.3)
Wood Manufactures	0.9 (1.5)	1.1 (1.9)	1.5 (2.6)	1.7 (2.6)	1.6 (2.2)	2.0 (2.5)	2.4 (2.8)	2.4 (2.7)
Metal Products	1.4 (2.3)	1.5 (2.6)	1.4 (2.4)	1.8 (2.9)	2.2 (3.0)	2.4 (3.0)	2.4 (2.9)	2.5 (2.8)
Toys	4.5 (7.1)	4.3 (7.5)	4.3 (7.2)	4.4 (7.0)	5.4 (7.2)	5.7 (7.2)	6.1 (7.3)	5.8 (6.7)
Metal Rolling, Extrusion, etc.	0.9 (1.5)	0.9 (1.6)	0.9 (1.5)	0.9 (1.4)	0.9 (1.2)	0.9 (1.1)	0.9 (1.1)	0.9 (1.1)
Building & Construction Materials	0.3 (0.5)	0.3 (0.6)	0.3 (0.6)	0.5 (0.7)	0.6 (0.8)	0.6 (0.8)	0.6 (0.7)	0.6 (0.7)
Others	4.4 (6.9)	4.2 (7.3)	4.3 (7.2)	4.0 (6.3)	5.0 (6.7)	6.0 (9.1)	6.6 (7.9)	7.5 (8.7)
Total	63.0 (100.0)	56.8 (100.0)	58.9 (100.0)	63.0 (100.0)	74.8 (100.0)	79.3 (100.0)	83.4 (100.0)	87.3 (100.0)

Source: Trade, Industry & Customs Department, Hong Kong.
(As adapted from Table 21, Lin & Mok, ibid.)

Notes: Figures in parentheses are percentages of totals.
All employment figures are for December except in 1975 where March figures are used.

the industry in absolute terms, or the shifting into labor substitution type of operation.

A similar trend is observed in Table IV.3 in the distribution of overseas investment. Overseas electronics investments had the greatest value all the time. In 1974, it reached the peak level share of 35.6%; but in 1980, the figure was cut down to 21.6%. In absolute terms, the investment had reached its peak in around 1974 and levelled off since then. The average rate of growth was again much lower than the other industries within the period of study.

As for the average firm size shown in Table IV.4a, the electronics industry was consistently about double that of the overall average. Together with the toys industry, they were the highest in average size among all manufacturing industries. Since overseas investments in the toys industry were mainly concentrated in the production of electronics types in recent years, this showed that overseas investments in electronics products were engaged in large scale production.

Table IV.4b gives the average investments per establishment in various industries. Attention must be drawn to the fact that local interests are excluded from the amounts of investments. Therefore, a joint-venture may be quite large in scale but overseas investments may not be necessarily substantial. Average investment per firm in electronics had always been above average, but it had started to decrease after the mid-70's. This decline indicates that the later investments were smaller in amounts, while larger average investments were found in the newly-emerged industries, such as food processing manufactures, printing and publishing, etc.

TABLE IV.3

DISTRIBUTION OF OVERSEAS INVESTMENTS in H.K.'S MANUFACTURING INDUSTRIES, EXCLUDING LOCAL INTERESTS (HK$ Mn, at the end of year)

Industry	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	Average Rate of Growth
Electronics	264.7 (34.9)	265.1 (31.7)	304.0 (21.8)	589.7 (35.6)	587.5 (34.7)	506.8 (27.3)	516.1 (26.1)	521.4 (24.8)	529.2 (23.0)	549.5 (21.6)	12%
Textiles	160.9 (21.2)	173.7 (20.8)	306.5 (22.0)	227.7 (13.7)	253.1 (14.9)	280.0 (15.1)	312.7 (15.8)	314.9 (15.0)	361.6 (15.7)	415.7 (16.3)	18%
Chemicals	11.6 (1.5)	11.0 (1.3)	124.5 (8.9)	96.5 (5.8)	96.5 (5.7)	234.9 (12.6)	236.1 (11.9)	255.8 (12.1)	303.7 (13.2)	304.9 (12.0)	281%
Electrical Products	16.3 (2.1)	19.2 (2.3)	49.8 (3.6)	94.9 (5.7)	97.2 (5.7)	195.8 (10.5)	201.5 (10.2)	203.3 (9.7)	207.2 (9.0)	270.3 (10.6)	173%
Printing & Publishing	22.7 (3.0)	31.3 (3.7)	42.7 (3.1)	61.5 (3.7)	61.5 (3.6)	90.3 (4.9)	140.3 (7.1)	141.8 (6.7)	153.6 (6.7)	156.9 (6.2)	66%
Watches & Clocks	26.2 (3.4)	26.7 (3.2)	184.7 (13.3)	180.0 (10.9)	188.2 (11.1)	132.9 (7.1)	135.2 (6.8)	137.4 (6.5)	167.6 (7.3)	181.4 (7.1)	66%
Food Manufactures	5.4 (0.7)	56.6 (6.8)	58.5 (4.2)	59.9 (3.6)	59.9 (3.5)	71.9 (3.9)	72.5 (3.7)	122.5 (5.8)	122.5 (5.3)	122.6 (4.8)	241%
Metal Products*	38.4 (5.1)	37.3 (4.5)	67.9 (4.9)	49.7 (3.0)	49.7 (2.9)	84.7 (4.6)	95.1 (4.8)	99.4 (4.7)	103.1 (4.5)	104.9 (4.1)	19%
Toys	36.4 (4.8)	30.3 (3.6)	74.0 (5.3)	57.8 (3.5)	58.2 (3.4)	60.3 (3.2)	60.6 (3.1)	67.6 (3.2)	67.8 (2.9)	65.7 (2.6)	9%
Metal Rooling, Extrusion, etc.				45.9 (2.8)	46.8 (2.8)	54.9 (3.0)	54.9 (2.8)	54.9 (2.6)	57.9 (2.5)	57.9 (2.3)	4%
Building & Construction materials		18.7 (2.2)	32.7 (2.3)	51.9 (3.1)	51.9 (3.1)	34.5 (1.9)	34.5 (1.7)	34.5 (1.6)	34.5 (1.5)	34.5 (1.4)	11%
Others	176.9 (23.3)	166.0 (19.9)	145.5 (10.5)	142.9 (8.6)	144.4 (8.5)	111.9 (6.0)	111.9 (5.7)	152.6 (7.2)	192.4 (8.4)	283.8 (11.1)	7%
Total	759.9 (100.0)	835.9 (100.0)	1,392.1 (100.0)	1,658.4 (100.0)	1,694.9 (100.0)	1,858.9 (100.0)	1,978.5 (100.0)	2,106.1 (100.0)	2,301.1 (100.0)	2,548.1 (100.0)	26%

Source: Trade, Industry & Customs Department, Hong Kong. (As adapted from Table 13, Lin & Mok, ibid.)

Notes: *Metal & metal products for 1971-73.
Figures in paretheses are percentages of totals.

TABLE IV.4a

THE SCALE OF OVERSEAS ELECTRONICS INVESTMENTS IN COMPARISON WITH MAJOR INDUSTRIES
- NUMBER OF EMPLOYEES PER ESTABLISHMENT

Industry	1973	1974	1975	1976	1977	1978	1979	1980
Electronics	629	450	419	417	463	438	429	385
Textiles	173	175	169	190	198	186	186	210
Toys	563	614	614	489	540	518	508	527
Watches & Clocks	490	300	278	255	196	185	191	176
Electrical Products	488	400	308	233	233	208	193	179
Food Manufactures	225	275	250	170	114	118	141	133
Printing & Publishing	200	150	150	150	200	190	167	167
Total Manufacturing	300	241	231	218	221	205	195	190

Source: From Tables IV. 1 & 2

TABLE IV.4b

THE SCALE OF OVERSEAS ELECTRONICS INVESTMENTS IN COMPARISON WITH MAJOR INDUSTRIES
- AMOUNTS OF INVESTMENTS PER ESTABLISHMENT (HK$Mn)

Industry	1973	1974	1975	1976	1977	1978	1979	1980
Electronics	6.3	11.3	10.1	8.6	8.1	7.7	7.4	7.3
Textiles	5.5	3.9	3.9	3.9	3.6	3.3	3.6	4.0
Toys	9.3	8.3	8.3	6.7	6.1	6.1	5.7	6.0
Watches & Clocks	18.5	10.6	10.5	6.0	5.4	5.1	5.1	4.4
Electrical Products	6.2	9.5	7.5	10.9	9.6	8.1	7.1	8.0
Food Manufactures	14.6	15.0	10.0	7.2	5.2	7.2	7.2	6.8
Printing & Publishing	7.1	7.7	7.7	11.3	15.6	14.2	12.8	13.1
Total Manufacturing	6.6	7.0	6.6	6.4	5.8	5.5	5.4	5.5

Source: From Tables IV. 1 & 2

There is no way to compare the technology level of the various industries, nor their relative contributions to export and production. It appears that the electronics industry, because of its early arrival, continued to share a bigger portion in export and production, but the technology level may not be much higher than the late-comer industries.

ii) Compared with the whole industry

The contribution of overseas electronics firms can be evaluated by a comparison with the whole industry in the areas concerning the number of establishments, employment, the export performance as well as in the level of technology.

The shares of overseas electronics in employment and establishment over the years are given in Table IV.5. In 1973, more than half of the electronics workers were found in firms associated with overseas investments, but the proportion had declined over time and in 1980 was cut down to a bit less than one-third. The share of establishment was also found declining over time. As the number of overseas electronics firms had become stable since 1974, we can draw a conclusion that many local firms were established in the industry during the latter half of '70s.

Table IV.6 gives the production and export performance of overseas electronics firms. In 1969, most of the electronics exports (94.2%) were accounted for by overseas firms which by itself illustrated the importance of the overseas firms to the industry at that time. The trend of their export share was also on the decline: it was cut down to 46.9% in 1974 and even further to 39.2% in 1980. Figures for the calculation of the export-output ratio is incomplete, but the high export ratio of the overseas firms in Hong Kong is very obvious. This ratio is

TABLE IV.5

SHARE OF OVERSEAS ELECTRONICS FIRMS IN THE WHOLE INDUSTRY
- EMPLOYMENT & ESTABLISHMENT
(in percentage)

Year	Establishment	Employment
1973	12.3	53.9
1974	16.3	49.2
1975	12.6	47.2
1976	8.8	34.6
1977	8.7	42.2
1978	8.1	40.0
1979	6.7	34.1
1980	6.8	32.2

Source: Census & Statistics Department,
Trade, Industry & Custom Department,
Hong Kong Government.

TABLE IV.6

PRODUCTION AND EXPORT PERFORMANCE OF OVERSEAS ELECTRONICS FIRMS

(HK$Mn)

Output, Export \ Year	1969	1974	1980
Output value	856.4	1,400.5	--
Export value	772.8	1,242.2	5,027.0
Total electronics export	820.4*	2,648.4	12,811.0
$\frac{\text{Export}}{\text{Output}} \times 100\%$	90.2%	88.7%	--
$\frac{\text{Export}}{\text{Total electronics export}} \times 100\%$	94.2%	46.9%	39.2%

Notes: *This export figure is not the same as the figure in Chapter 3, as the period of coverage is not the same.

Source: Industrial Survey Report: The Electronics Industry, 1970, Commerce & Industry Department, Hong Kong Government.
Industrial Survey Report: Overseas Investment in Hong Kong Manufacturing Industries, Aug. 1975, TICD, Hong Kong Government.
TICD Survey on Overseas Manufacturing, Summer 1981, Hong Kong Government.

expected to decline since many of the overseas operations in Hong Kong recently are suppliers of intermediate products to local electronics firms.

Tables IV.5 and 6 present an unambiguous picture that the supremacy of foreign firms in the industry had gradually been phased out in Hong Kong. Nevertheless, in terms of scale of operation, local firms are still by far smaller. This point can be illustrated in Table IV.7 below:

Table IV.7

SCALE OF OPERATION — OVERSEAS FIRMS IN COMPARISON WITH THE WHOLE ELECTRONICS SECTOR

	1974	1980
Number of employees per establishment		
Overseas firms	450	385
Whole industry	121	80
Ratio of overseas firms to the whole industry	3.7 : 1	4.8 : 1
Value of exports per establishment (HK$Mn)		
Overseas firms	23.9	67.0
Whole industry	6.4	11.2
Ratio of overseas firms to the whole industry	3.7 : 1	6.0 : 1

Source: From Tables IV.1, 2, 6 and Table I.1

The foreign firms are found larger both in employment size and value of exports. The larger differences between the ratios of overseas firms to whole industry in 1980 than 1974 suggest that the local firms had become much greater in number but essentially they were small in scale.

The skill level of overseas electronics firms in comparison with the whole industry in 1974 is given in Table IV.8. The data for the whole industry came from the Third Manpower Survey of the industry while those for overseas firms were from the overseas industrial survey report. The difference in data sources reminds us that such statistics should be used only with reservation. In 1974, the ratio of skilled workers in overseas firms is much lower than those of the whole industry. This suggests a standard but large scale operation of the foreign firms, with major research and development works being done in the parent companies. But the percentage of technologists to total production workers was higher for the foreign firms, showing that the skill required even for minor modification in the production process was still higher for the foreign firms. Data for more recent comparison were not available from official sources. But it is believed that the gap between them would become narrower as both the foreign and local firms are working side by side competitively. The close interaction implies a very short period of diffusion in technologies.

c) Behaviour of the Overseas Electronics Firms

i) Distribution by sub-sectors

According to our definition of the electronics industry, the distribution of overseas electronics firms are classified in Table IV.9, based on the 1981 survey on overseas investments in manufactures by the TICD of Hong Kong.[7]

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[7]The number of the overseas electronics firms are not the same as the officially published numbers by the TICD, as the definition of the products are not the same. The opinions and behaviours of the overseas firms under this sub-topics are taken from the questionnaires of these 86 firms. And for the sake of consistency, the use of these 86 firms as the population of overseas electronics firms are only restricted to the paragraphs under this sub-topics.

TABLE IV.8

SKILL LEVEL OF OVERSEAS ELECTRONICS FIRMS IN COMPARISON WITH THE WHOLE INDUSTRY (1974)

Skill Level	Overseas Firms	Whole Industry
Technologists	408	757
Technicians	775	3,066
Craftsmen	1,480	8,186
Sub-total of higher-skill workers	2,663	12,009
Operatives	17,178	35,926
Unskilled	1,309	1,025
Sub-total of less-skill workers	18,487	36,951
Ratio of higher-skill to less-skill workers	1 : 6.9	1 : 3.1
Percentage of technologists to total production workers	1.9%	1.5%

Sources: Electronics Industry. Reports of the Third Manpower Survey, Hong Kong Training Council, Hong Kong Government.
Industrial Survey Report: Overseas Investment in Hong Kong Manufacturing Industries, Aug. 1975, TICD.

TABLE IV.9

DISTRIBUTION OF OVERSEAS ELECTRONICS MANUFACTURERS
- BY NUMBER OF ESTABLISHMENTS IN SUB-SECTORS

Products \ Number	Parts	Final	Total
CONSUMER GOODS:			
Electronic calculator	1	1	2
Microwave/Burglar Alarm	-	1	1
Electronics Toys & Games	-	8	8
Watches & Clocks	9	9	18
Hi-Fi Equipment	1	2	3
Cassette Tape	-	3	3
Radio	3	5	8
Cassette Tape Recorder	3	3	6
Sub-total			45* (52.3%)
EQUIPMENT GOODS:			
Telecommunication	-	1	1
Computer	11	1	12
Photocopying	-	2	2
Cash-register	-	1	1
Sub-total			15* (17.4%)
COMPONENTS:			
Semi-conductors	-	-	11
Machinery & equipment for semi-conductors	-	-	3
Passive-mechanical components	-	-	12
Sub-total			26 (30.3%)
Grand Total			86 (100.0%)

Notes: The apparent discrepancies in the number of establishments arises because some establishments manufacture more than one major products.

Source: Trade, Industry & Customs Department, Hong Kong. (Adapted from a survey conducted by TICD in summer 1981 on the overseas investments in manufactures in H.K.)

More than half of the foreign firms, existing currently, fall into the consumer goods sector. Amongst them, 40% are found in the watches and clocks production. Others such as electronics toys and games, transistorized radio and cassette tape recorder also share an important portion.

Nearly three-quarters (73.3%) of the equipment goods manufacturers are found in the computer parts production. Besides, telecommunication equipment, photo-copying machines, cash-register machines and the assembly of whole computer sets are also found in the sector.

For the components sector, manufacturers of semi-conductors or machinery and equipment for semi-conductors account for 57.7% of the sector, involving mostly in transistor, diodes and integrated circuits assembling or testing. The passive-mechanical components share 42.3% of the sector, and cover a wide range of products.

ii) Opinions of the overseas firms

Some information on the factory's operation for these eighty-six plants can be quoted from the same source.[8] Concerning the mode of operation, about two-thirds (66.2%) of the manufacturers

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[8] The questions which are quoted here are only part of the questionnaire. The results of these questions are:

i) Q: How do you describe your production process?
A: (A) Labor intensive — 66.2%
(B) Capital intensive — 33.8%

ii) Q: Do you consider your production techniques are technologically advanced?
A: (A) Yes — 81.4%
(B) No — 18.6%

iii) Q: Does your company have any sub-contracting arrangements with other local manufacturers?
A: (A) Yes — 51.2%
(B) No — 48.8%

iv) Q: Does your company produce any products under licensing arrangements?
A: (A) Yes, as licence owner) 27.9%
(B) Yes, as licencee)
(C) No — 72.1%

regard their production processes as labor intensive rather than capital intensive (33.8%). However, the majority of them (81.4%) consider their production techniques are technologically advanced. Attention here must be drawn to the fact that, while the products or the machines for production may be advanced, most of the workers may be doing only simple repetitive assembly work.

For technological transfer via the indirect channels, about half (51.2%) of them have sub-contracting arrangements with other local manufacturers. Further analysis reveals that the sub-contracting work are mainly involved in electro-plating, plastic casing, soldering or sub-assembling, which are supporting industries of the sector. However, most of them (72.1%) do not produce products under licensing arrangement, and technologies embodied in licensing arrangement are usually more advanced.

Past performance may be evaluated in terms of profits. About one-third (32.5%) of them regard their performance as unsatisfactory, while 60.5% and 7.0% of them are either satisfactory or highly satisfactory respectively. Their attitude towards investments in Hong Kong can be further reflected by the following

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v) Q: How would you evaluate your company's past performance in terms of profits?
A: (A) Highly satisfactory — 7.0%
(B) Satisfactory — 60.5%
(C) Not satisfactory — 32.5%

vi) Q: How would you evaluate and expect your company's future performance in terms of profits?
A: (A) Good — 18.6%
(B) Satisfactory — 41.9%
(C) Bad — 9.3%
(D) Uncertain — 30.2%

vii) Q: Are you going to phase out part or all of your manufacturing operations in Hong Kong?
A: (A) Yes, the whole operation — 0%
(B) Yes, part of the operation — 18.6%
(C) No — 81.4%

viii) Q: Would you choose Hong Kong as an offshore manufacturing base, if you were going to set up a plant all over again?
A: (A) Yes — 65.1%
(B) No — 34.9%

results. Most of them (81.4%) are not planning to phase out, either part or all, their manufacturing operations in Hong Kong. In fact, around two-thirds of them (65.1%) report that they would still choose Hong Kong as an offshore manufacturing base, if they were allowed to start all over again.

However, when future performance is taken for consideration, 30.2% of them admit that they are uncertain about future prospects, 9.3% frankly expect poor profits, 41.9% are satisfactory and 18.6% believe it to be good. A closer look reveals that those with good expectations are concentrated (68.7% of them) in electronics toys and games, computer and passive components, or the sub-sectors which are rising in importance and fulfilling general expectation. Those holding pessimistic viewpoints are quite dispersed showing no systematic pattern.

In short, most of the overseas investors under survey are rewarded for what they expect and continue to contribute to the development of the industry. But it must be borne in mind that, the manufacturers covered in the TICD survey are those who are successful in the competition process and are willing to provide information. Therefore, their opinions could be biased on the optimistic side.

d) Summary and Conclusion

The role of overseas investments in Hong Kong's industrialization is generally believed to be less crucial than that in the neighbouring countries. In general, this view may be quite true, but it is certainly not in the case of the electronics industry. Foreign investments virtually brought the sector into existence in the sixties.

The electronics industry is proved to be more attractive to foreign investors when compared to other industries, at least in the

sixties and the early seventies. In aggregate terms, as measured by the number of establishments, employment as well as the amount of overseas investments, the electronics industries were larger than their counterparts in other manufacturing industries. Besides, its scale is larger than the others when per establishment employment and investments are compared. However, the share of electronics amongst all the overseas investments has been declining, showing a process of diversification in foreign investments in widening the industrial base of Hong Kong as Hong Kong is becoming more developed.

Within the industry, overseas electronics firms are found dominating the sector in the sixties, in terms of employment, production or export. However, as the industry expands and becomes more sophisticated, more and more local firms have emerged, but they are usually much smaller in scale of operation. The foreign firms do not absorb higher portion of skilled workers, as usually presumed. This is probably due to the fact that they are generally involved in large scale production at the assembly level.

Regarding the opinions of the foreign investors, most of them felt that it had been quite rewarding. Some of them even made good fortune for their ventures in Hong Kong. But, as most of products manufactured here are labor-intensive in nature, and wages and other costs in Hong Kong have been increasing fast in recent years, and on top of these, due to intense competition and the gloomy world economic outlook, a considerable number of them are either uncertain or pessimistic about the future performance.

In conclusion, two distinct features can be observed. Firstly, direct foreign investments in electronics have been rather successful in playing the role of 'tutor',[9] as many local investments are

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[9]From K. Kojima, Japan and A New World Economic Order, Croom Helm,

attracted into the field and the importance of foreign firms is gradually fading out. Secondly, the overseas firms in electronics are found working side by side with the local ones and thus can integrate smoothly into the economy of Hong Kong. In fact, the overseas investments, except their larger scale of operation, are not easily distinguished from the middle or large sized local plants. The small size of the colony makes technology diffusion almost immediate: the skilled workers previously employed in foreign firms are helpful to local entrepreneurs in their imitation process, and the traditional openness of the economy have made information travel fast and the local entrepreneurs quicker and more flexible in taking up new ideas.

London, 1977, p. 85, "Direct foreign investment ... should play the role of 'tutor', teaching technology, management and marketing to local people, and encouraging the growth of local skilled labourers and managers, making them do and/or establish business by themselves."

CHAPTER V

THE ROLE OF MULTINATIONAL FIRMS IN ELECTRONICS INDUSTRY

a) Introduction

The distinctive feature of a MN firm is that it conducts activities across national boundaries. Therefore, the study of MN firms must have some international perspective and cannot be confined to a single economy. Particularly in the case of electronics industry where extensive foreign direct investments are found concentrated in certain areas: Western Europe, North America and the Far East.[1] Because of geographic proximity and other factors, the countries in the Far East have certain similarities. For the sake of comparison, we shall have a survey of the development of the electronics industry in the region.

The countries in the region can be classified into three categories. Japan is the only developed country. The countries which belong to the developing group but are much more successful in industrialization are the so-called newly industrialized countries which include Hong Kong, Taiwan, Singapore and South Korea (or simply Korea).[2] The remaining countries are Malaysia, Thailand, Philippines

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[1] This pattern can be reviewed from the investments of the American and Japanese multinationals. See Toshiaki Hayashi & Akira Suehiro, Comparative Advantage of Electronic Industry in Asia, Economic Development Unit, Institute of Developing Economics, Penang, (A progress report), June 1981, p. 43.

[2] These countries together with Japan are also called the countries in the Asian Growth Belt, see M.H. Hsing, A Comparison of Technological Progress of Manufacturing Industries in the United States and the Asian Growth Belt, Economic Research Centre, CUHK, 1981.

and Indonesia, which are less developed but following closely the NICs in recent years.

It is sometimes reported that whenever the electronics industry becomes matured in a country, a shift of emphasis from consumer goods to equipment goods production will be observed, as illustrated from the experience of U.S., Japan and Korea.[3] The change can be fitted into the product life cycle framework. Starting from the high income countries, the demand for electronics consumer goods after innovation will extend to other countries according to the descending order of income level. This occurs basically because of lower prices due to scale economies, standardized production process, increase in world income as well as the demonstration effect. When the products become more standardized and more labor contents are required, the location of production will then shift to lower costs areas usually in the direction of the same descending order of income level. The advanced countries can no longer have comparative advantage in the standardized consumer products and are forced to shift to higher-end equipment goods sector where more skills and broader industrial base are required. In the region, the route of this shift is from U.S. to Japan, to NICs and then other LDCs. The major change agents for this shift are the MN firms[4] – as they may withdraw investments from countries of rising wages and invest in lower costs areas, or make investments in the components and equipment goods sectors in the countries where the electronics industry is well-established.

Concerning the rate of development in the industry, the so-called 'late-comer thesis', which in its weakest form asserts that "late

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[3] T. Hayashi & A. Suehiro, op. cit., p. 22.

[4] The development of Japanese electronic industry relied rather little on the American multinationals, but in the cases of NICs and LDCs, they depended heavily on the Japanese and American multinationals for their developments.

comers will pass through any sequence of development more rapidly than early starters",[5] should receive more attention. The later-comers can avoid mistakes made by early starters, and the experiences learnt from these mistakes are not useful at all or can be easily obtained. According to this thesis, we may expect that the LDCs will develop at a rate faster than the NICs, which in turn faster than Japan, and the U.S. However, as Japan and U.S. firms are the dominant figures in the industry of the region, the consequences will be far more complicated than what this simple thesis predicts. In the following, we shall discuss the progress of the industry in the region with some cross-country comparison and highlight the position of U.S. and Japanese firms in this process.

b) Development of Electronics Industry in the Region

Table V.1[6] summarizes the growth of electronics exports of the countries in the region over the last ten years. Japan is by far the largest exporter in the region. Amongst the NICs, Hong Kong and Singapore started exporting electronics products earlier than Taiwan and Korea, but were soon overtaken by the latter in value terms.[7] Exports from the Philippines, Thailand, Malaysia and Indonesia appeared only in the second half of the '70s, but the values of their exports are still much smaller than the NICs. However, it is interesting to note that the growth rates are in the reverse order of the level of

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[5] E. Ames & N. Rosenberg, "Changing Technological Leadership and Industrial Growth", as in The Economics of Technological Change, edited by N. Rosenberg, Penguin Modern Economics Readings, 1971, p. 435.

[6] The data are adapted from T. Hayashi & A. Suehiro, op. cit., p. 14. All the values are converted to U.S. dollars so that they can be compared with each others.

[7] As also pointed out by Hsing that "... both South Korea and Taiwan would in general achieve more impressive technological progress than Hong Kong and Singapore..." See M.H. Hsing, op. cit., p. 15.

TABLE V.1

GROWTH OF ELECTRONICS EXPORT IN ASIA (1970-1979)
(Mn US$)

Year \ Country	Japan	Korea	Taiwan	Hong Kong	Singapore	Philippines	Thailand	Malaysia	Indonesia
1970	2410.2			269	83.9				
1971	2917.1	89		321	113.6				
1972	3495.2	142	510.7	409	225.1				
1973	3937.5	369	769.4	546	464.8				
1974	4402.0	518	1028.1	686	719.6		3.6	83	
1975	4708.5	582	708.9	581	602.0	47.2	2.4	126	
1976	7919.3	992	1282.1	874	866.2	84.1	1.5	213	1.1
1977	9199.7	1051	1502.8	940	1046.8	113.3	57.8	337	0.5
1978	13661.4	1396	2052.8	1027	1356.6	202.7	110.0	733	26.1
1979	13290.0	1845	2603.7		1597.0	313.9	155.7	782	75.9
Growth Rate:									
1970-75 (%)	14.3	59.9	12.9	16.7	47.1	--	--	--	--
1975-79 (%)	16.1	33.4	35.5	20.9	27.6	60.6	182.2	57.8	70.5

Source: See footnote 6.

economic development, i.e., the LDCs are faster than the NICs, which in turn are faster than Japan.

A more relevant comparison could be made for the countries belonging to the same category, such as to Hong Kong, Singapore, Taiwan and Korea. Comparison of this sort is bound to be a difficult task. Different countries may have different definitions for the industry, different classifications of products, different sets of statistics available, or even different interpretations for the same terms. However, this comparison is essential for our purpose. Therefore, our way to work it out is to check all the statistics carefully and only make use of what are available from reliable sources.

For Hong Kong, the importance and development of the industry have been given in Chapters III and IV.

For Singapore, the electronics industry started as early as in 1965, and expanded very fast since then. Electronics today is the largest among the manufacturing sector in Singapore, both in terms of employment and value-added.[8] The industry is heavily export dependent as its exports always share about 90% of the output values.

In Taiwan, the production of transistorized radio started in 1961, but at that time the production was only for local consumption. The export of electronics became substantial starting in the turn of seventies when the establishment of Kaohsiung Export Processing Zone proved to be successful.[9] Today, the electronics industry in Taiwan is the second largest in the region, next only to Japan.

The electronics in Korea started only in the end of sixties but the rate of development was spectacular. From 1973 onwards, electronics

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[8] Census of Industrial Production, Department of Statistics: Industry Codes 38211/2, 38321, 38322, 38324, Singapore.

[9] K. Yoshihara, op. cit., pp. 133-178.

products accounted for more than 10% of the annual total exports. The industry is not so export dependent as the local market is large enough to absorb part of the production. In 1979, the ratio of export to production was 56.2%, much less than its competitors in the region.[10]

The structure of electronics industry for these countries can be seen in Tables V.2a and b. Table V.2a gives the structure of the electronics production of NICs in 1977, where the figures for Hong Kong came from export statistics and the others were production output values. It can be seen that the portion of consumer goods sector for Hong Kong was exceptionally high and the components sector was exceptionally low. This pattern is also shown in exports to the U.S., Table V.2b. This phenomenon should not be interpreted as Hong Kong's electronics industry being less matured. It was rather that Hong Kong made good use of its flexibility and strength in the modification of consumer goods, while components were imported by free trade.

Before discussing the contributions made by MN firms, some socio-economic factors which are also important for the difference in the development of electronics must be mentioned.

Population is a crucial factor. Larger local market size helps the manufacturers in gaining experience before going international, and thus make it less vulnerable to external fluctuation. This advantage also encourages products innovation as local market can provide a test market for them. In addition, foreign investments can also be attracted into the protected market to establish labor-intensive assembly plants. This advantage is of particular relevance to the electronics industry in Japan, and to a lesser extent in Korea and Taiwan, which are larger than Hong Kong and Singapore.[11]

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[10] Electronics Industries Association of Korea, Korea.

[11] M.H. Hsing, op. cit., p. 15; K. Yoshihara, op. cit., chapter 5; T. Hayashi & A. Suehiro, op. cit., pp. 13-21.

TABLE V.2a

STRUCTURE OF ELECTRONICS PRODUCTION 1977
- FOR H.K., SINGAPORE, TAIWAN & KOREA
(% of total output)

Products	Hongkong	Singapore	Taiwan	Korea
Consumer Goods	66	48	50	37
Equipment Goods	18	2	7	9
Components	16	50	43	54
Total	100	100	100	100

Source: The Electronics Industry Association of Korea.
Statistical Department, Inspectorate General of Customs, Taiwan.
Department of Statistics, Singapore.
Hong Kong Trade Statistics (from Table III.1b), Hong Kong.

TABLE V.2b

TOTAL ELECTRONICS IMPORT INTO U.S. 1979
- FROM H.K., SINGAPORE, TAIWAN & KOREA
(US$ Mn)

Products	Hongkong	Singapore	Taiwan	Korea
Consumer Goods	404.9 (60.9)	201.1 (12.9)	894.7 (53.9)	493.3 (35.5)
Equipment Goods & Components	259.8 (39.1)	1,359.9 (87.1)	764.4 (46.1)	898.0 (64.5)
Total	664.7 (100.0)	1,561.0 (100.0)	1,659.1 (100.0)	1,391.3 (100.0)

Note: The figures in parentheses are percentages of the total.

Source: U.S. General Imports, Schedule A, Commodity by Country.
U.S. Department of Commerce, Bureau of the Census, U.S.

Large population size will only be advantageous if the general income level of the country is also higher. The income elasticity for manufactured goods are usually greater than unity[12] and thus the higher income country has higher portion of local demand for the electronics products. Here the distribution of income should also be taken into consideration in addition to per capita GNP. Therefore, for countries such as the Philippines, Thailand and Indonesia, which are larger in population but relatively low in income level or have severe income disparity, are still unable to develop the industry successfully.

Countries with a significant agricultural sector may have larger potential supply of labor for standardized assembly work, but at the same time the resulting dual economy and the problems associated with rural-urban migration are very often the chief bottleneck for their developments.[13] In this respect, the city-states, i.e., Singapore and Hong Kong, are in a more advantageous position: they have abundant supply of low-priced labor by immigration from the neighbouring countries (China, Malaysia, etc.), but leave the less-productive, land-tied sector remaining in those countries.

Apart from socio-economic considerations, the policies of governments also have important effects. These include such things as policies on imports and exports operations, attitudes towards the injection and outflow of capital, policies in manpower training, priority of land use, provision of technological supporting facilities

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[12]This is sometimes referred as the Engel's law which states that when income rises, the proportional increase of expenditure on food will be less while the expenditure on manufactured goods will be more than the proportional increase in income.

[13]The agricultural sectors of all the NICs in the region are smaller than those in the LDCs, see Industrialization in Asia — Some Implications for Australian Industry, Bureau of Industry Economics, Australia, 1978, pp. 53-55.

as well as the scheme of taxation in general. Strictly speaking, all countries in the region do have some sort of government promotion. Hong Kong is quite distinct from the others as it merely provides basic industrial facilities instead of extensive government efforts with well-defined priority of products to be developed, while the others (Singapore, Taiwan and Korea) all have formal schemes for promotion. Therefore, the development of Hong Kong's electronics industry is basically a natural process with business decisions left entirely to businessmen. To identify which is a better alternative is not possible as the routes to successful developments are many and difficult.[14] However, the differences in the governments promotion policies will affect the rates and extents of MN firms participation. For countries with well-defined schemes of promotion, the MN firms attracted will be only those favoured by governments. In the case of Hong Kong, the firms making investments here will make their own judgements based on the comparative advantages in Hong Kong.

With respect to the electronics industry, foreign investments are very important to them all. Hong Kong emerged as exporter in mid-60s because of extensive Japanese and American investments. Taiwan overtook the position of Hong Kong in 1972 after the success of Kaohsiung Export Process Zone in attracting more foreign investments. Korea and Singapore experienced rapid growth in the early 70s when large amounts of foreign investments poured into the components sectors. In fact, in the early 70s, the share of export by firms with foreign interest in all these countries are estimated to be very significant indeed: 80% for Taiwan in 1971, 85% for Korea in 1974, 99% for

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[14] Four different approaches are found for the industrialization of Hong Kong, Singapore, Taiwan, and Korea, and yet they are equally successful in their ways. See Industrialization in Asia — Some Implications for Australian Industry, pp. 99-105; and also T. Geiger & F.M. Geiger, op. cit., pp. 24-25.

Singapore in 1970 and 90% for Hong Kong in 1970.[15] The share of export by these foreign firms, as described in chapters before, has been declining gradually in Hong Kong recently, and it is very likely that it is similar for the other NICs. Tables V.3a and b give the distribution of electronics investments for Taiwan and Korea in recent years. In 1978, the local firms of Taiwan had a share of 86.9% in numbers but only 59.0% in the paid up capital, indicating the pattern of local operations — much larger in numbers but smaller in scale — similar to that in the case of Hong Kong. The share of foreign associated firms maintained a 60% level of all Korean electronic investments since 1972, indicating that the electronics industry in Korea was still highly foreign-dependent. The separation of investments as such in Singapore is not available, but electronics investments from external sources are estimated to be more than 90%.[16]

c) The Role of Japanese and American Multinationals

From Table V.3a, we can see that for Taiwan about 81% of foreign investments are associated with Japanese and American firms. The importance of these two countries to Hong Kong can also be seen from Table V.4 below:

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[15] K. Yoshihara, op. cit., pp. 133-178.

[16] In Singapore, foreign direct investments always share more than 90% of the manufacturing sector and the electronics industry should be more as government policies favour the foreign investments in this industry. This estimation can also be supported by the export share of the foreign associated firms.

TABLE V.3a

FOREIGN INVESTMENT IN THE ELECTRONIC INDUSTRY IN TAIWAN (1978)

Country of Origin	No. of Establishment		(NT$ Mn) Paid-up Capital	
Local	1,091	(86.9)	12,575	(59.0)
U.S.A	36	(2.9)	2,347	(11.0)
Japan	39	(3.1)	1,685	(7.9)
Netherland	3	(0.2)	993	(4.7)
West Germany	2	(0.2)	101	(0.5)
Taiwan - USA Joint Venture	7	(0.6)	659	(3.1)
Taiwan - Japan Joint Venture	46	(3.7)	2,383	(11.2)
Other Joint Ventures	9	(0.7)	277	(1.3)
Overseas Chinese	22	(1.8)	288	(1.4)
Total	1,255	(100.0)	21,308	(100.0)

Notes: The figures in parentheses are percentages of total.

Source: Statistical Department, Inspectorate General of Customs, Taiwan.

TABLE V.3b

DISTRIBUTION OF ELECTRONIC INVESTMENTS IN KOREA OVER YEARS

(in Millions of US Dollars)

Ownership \ Year	1968	1972	1975	1976	1977	1978
Local firms	28.5 (65)	96.4 (46)	312.7 (36)	647.1 (45)	668.3 (39)	1,003.9 (46)
International Joint-Venture	24.0 (1)	40.9 (20)	229.4 (27)	307.6 (22)	489.8 (29)	633.1 (28)
Foreign firms	15.0 (34)	70.3 (34)	318.1 (37)	472.9 (33)	554.9 (32)	634.2 (25)
Total	67.5 (100)	207.6 (100)	860.2 (100)	1,427.6 (100)	1,713.0 (100)	2,271.2 (100)

Note: Figures in parentheses denote the percentages of the total.

Source: The Electronics Industry Association of Korea, Korea.

TABLE V.4

SOURCES OF OVERSEAS ELECTRONICS INVESTMENTS —
DISTRIBUTION AND OWNERSHIP NATURE IN HONG KONG (1978)
(Investments: In HK$Mn. excluding local interest)

	U. S.	Japan	U. K.	Swit.	Others	Total
a) Investments	343.5 (65.9%)	61.0 (11.7%)	10.5 (2.0%)	3.3 (0.6%)	103.1 (19.8%)	521.4 (100.0%)
b) Ownership (No. of firms)						
Wholly-owned	31	10	3	1	n.a.	
Joint-Ventures	8	7	0	0	n.a.	
Sub-total	39 (57.4%)	17 (25.0%)	3 (4.4%)	1 (1.5%)	8 (11.8%)	68 (100.0%)

Notes: The figures in parentheses are the percentages of the totals.

Sources: Trade, Industry & Customs Department, Hong Kong. Adapted from Lin & Mok, Trade, Foreign Investment and Development in Hong kong, (mimeo.), CUHK, 1982, Tables 17, 18.

For Singapore and Korea, though the breakdown by sources are not available, the share of Japanese and American investments are expected to be more than 80%.[17] Table V.5 gives the major overseas electronics investments of Japan, about 63% of which are concentrated in S.E. Asia.

The position of Japanese investments in the region is not difficult to understand. Being the only developed country in the region, Japan undoubtedly has much larger economic influence. In addition, as some of these countries in the region were once under Japanese occupation, Japanese firms are in an advantageous position for having more familiarity and better connections. On top of these, Japanese investments in consumer products, which were initially located in Japan but later phased out in importance, are suitable for these

[17] T. Hayashi & A. Suehiro, op. cit., p. 64.

TABLE V.5

JAPANESE MAJOR OVERSEAS INVESTMENTS IN ELECTRONICS INDUSTRY
(number of firms)

Industry	Establishment Year	Korea	Taiwan	Hongkong	Malaysia Singapore	Thailand Philip. Indonesia	S.E. Asia Total	Others	World Total
Consumer Electronic Products	-1965	0	2	1	1	2	6	5	11
	1966-1969	0	3	0	5	5	13	10	23
	1970-1974	6	6	0	11	6	29	25	54
	1975-1979	2	2	1	5	3	13	26	39
Electronic Parts & Components	-1965	0	3	1	1	1	6	2	8
	1966-1969	1	13	0	0	1	15	7	22
	1970-1974	31	25	2	16	1	75	13	88
	1975-1979	8	9	2	17	4	40	12	52
Industrial Electronic Products	-1965	0	2	0	0	0	2	3	5
	1966-1969	0	1	0	0	0	1	5	6
	1970-1974	1	2	0	2	0	5	6	11
	1975-1979	2	0	0	1	0	3	7	10
Total		51	68	7	59	23	208	121	329

Source: Electronic Industries Association of Japan, Report on the Directions and Effects of the Internationalisation in Electronic Industry, 1980 (in Japanese).

(Adapted from Table 5-1, Comparative Advantage of Electronics Industry in Asia, (a progress report), Institute of Developing Economies, Penang, June, 1981).

countries. The immediate cause of Japanese investments in the region, however, was the position of the U.S. The move to escape from U.S. quota restriction and the reaction by Japanese multinationals in response to U.S. counterparts were the basic reasons for Japanese firms to go international.

The hope of U.S. multinationals to maintain its oligopolistic status both at home and overseas in face of keen Japanese competition put the American investments in the present position. The U.S. firms had certain basic technological innovations and thus led the world technology in electronics for more than 30 years since the World War II.[18] But the American consumer market was gradually lost to the firms of Japan and the S.E. Asian countries since the 60s. The American strategy to respond to this threat is to invest abroad for offshore assembly right in the centre of competition, first to Hong Kong, then to Taiwan, and later to Korea and Singapore and so on. As the American position in the components and industrial sectors were also expected to face similar threats later on (in fact these threats came about in the mid-70s), American multinationals also made preemptive investments for these products in the region.

As a result, the rival relationship between Japanese and American investments in the electronics sector has made them to enjoy supreme positon amongst all the investments from external sources. In fact, "the electrical and electronics industries of Southeast Asia could not have developed into what they are today unless they were propped up with foreign investment from Japan and the United States, or they depend on an accumulation of Japanese and American capital and

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[18]The three basic technological innovations in electronics after World War II were all invented by U.S. firms: in the late 40s was the invention of transistor, in 1960 the integrated circuit, and in 1970 the large scale integration. However, starting from the mid-70s, U.S. firms no longer had dominant position even in the IC (integrated circuit) sector because of strong Japanese competition.

technology."[19] Furthermore, a close observation also suggest that the production and export system of these countries also depend heavily on the global marketing strategy of the multinationals from these two countries.

So far we are talking about the importance of American and Japanese direct investments in electronics in these countries. We have not yet fitted the patterns of investments by these two countries into a general investments model. According to Kojima, the behaviour of direct investments from them represents two different models of investments.[20] Japanese investments are termed 'trade-oriented'. Under this model, the Japanese direct investments are towards natural resource development in which the Japanese economy is comparatively disadvantaged. As applied to manufacturing, investments are made in industries which are complementary to the changes of Japanese comparative advantage position, i.e. in industries at the lower end of its comparative advantage position. As the comparative advantage principle is upheld, a more important role played by the host countries is expected, and thus joint-ventures are preferred to wholly-owned subsidiaries. Furthermore, this implies that smaller scale of investments is expected for the Japanese.

On the other hand, the American investments are said to be the 'anti-trade oriented' type. It is said that the American industries making direct foreign investments are the innovative and oligopolistic industries which rank at the top of American comparative advantages. Though this type of investments is beneficial to the U.S. multinationals, it is harmful to the U.S. economy: foreign markets will be lost,

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[19] T. Hayashi & A. Suehiro, op. cit., p. 66.

[20] K. Kojima, Japan and A New World Economic Order, Croom Helm, London, 1977, pp. 77-82.

imports will be reversed and job opportunities will be exported. It is also harmful to the LDCs since this movement will hinder the structural change of U.S. economy and thus the traditional industries will stay at home. Tighter protectionist attitudes towards the imports of tranditional and standardized manufactured goods from LDCs are expected because of the pressure exerted by the vested interest groups of the traditional industries.

In fact, Kojima simply asserts that, in investments overseas, Japan concentrates in traditional sectors such as textile, while U.S. is in the advanced ones, such as electronics. As both countries are found concentrating in the electronics in the region, then is the reasoning of Kojima still correct? In other words, according to Kojima, U.S. investments should be mainly found in the equipment goods or other electronics products with higher technologies and skills while Japan in standardized consumer products. A complete answer to this question requires an in-depth study of the industry. As the information for the other countries are not available, an illustration of Hong Kong's case will be presented in the next chapter.

Nevertheless, some sort of comparison for the electronics investments by these two countries in the region can be made here.[21] American investments are usually made by large multinationals, but in the case of Japan, investments made by unlisted companies do share a substantial portion. Obviously, the average investments are smaller for Japan. More American investments prefer wholly-owned subsidiaries to joint-ventures so as to obtain better control. The output of American investments generally export back to U.S. are seldom serve the local or regional markets, while the Japanese firms do this to a much lesser extent. Considering by sector, American investments are

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[21] K. Yoshihara, op. cit., chapter 5.

more in industrial and active components while Japanese more in consumer products and passive components. However, they are similar at least in one elementary aspect — they invest in the region primarily because of the cheap labor costs and they usually arrange simple repetitive work for the plants they operate in the region. In other words, the plants in the region are only the comparatively disadvantaged parts of the electronics industries. Therefore, though there is some evidence supporting the assertion of Kojima, it appears that the crucial part of the thesis, i.e., the nature of investments, does not.

In order to have a better understanding of the role of multinationals in the S.E. Asian countries, the relationship of the multinationals to each of the countries concerned over time has to be studied. For simplicity, however, we only concentrate in U.S., Japan and all other S.E. Asian countries as a whole. From 1960 onwards, the development can be divided into four stages[22] as shown in Diagram V.1 a, b, c, and d.

The first stage was between 1960 to 1964. In this period, Japanese investments in S.E. Asia were mainly found in consumer sector and chiefly served the host markets. At that time, Japan exported its consumer goods in substantial quantities to U.S. while the latter concentrated in the development of industrial equipments at home. U.S., on the other hand, exported industrial goods to Japan, and made direct investments abroad to S.E. Asia in the same consumer sector so as to counteract Japanese pressure by cheaper production cost.

The second stage covered the years from 1965 to 1969. In this period, the Japanese made extensive investments in the S.E. Asian countries, notably Taiwan, Korea and Singapore. This was brought

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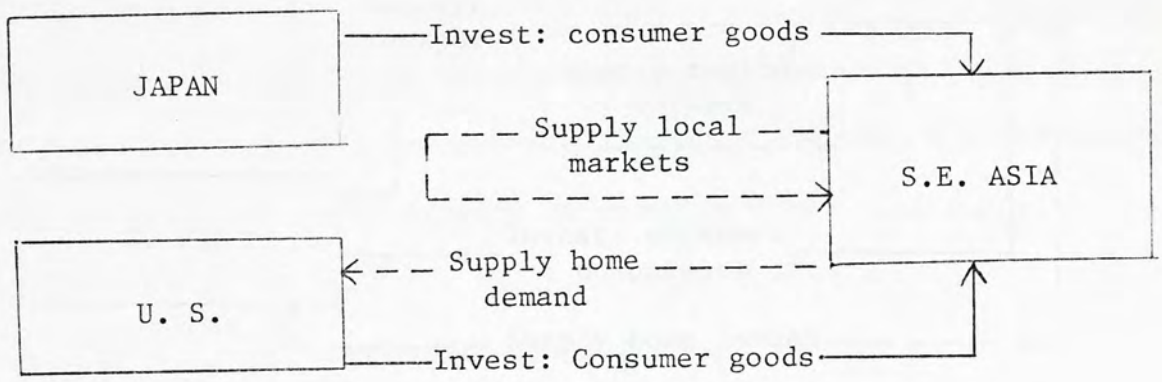
[22] T. Hayashi & A. Suehiro, op. cit., pp. 45-58 and K. Yoshihara, op. cit., pp. 133-178.

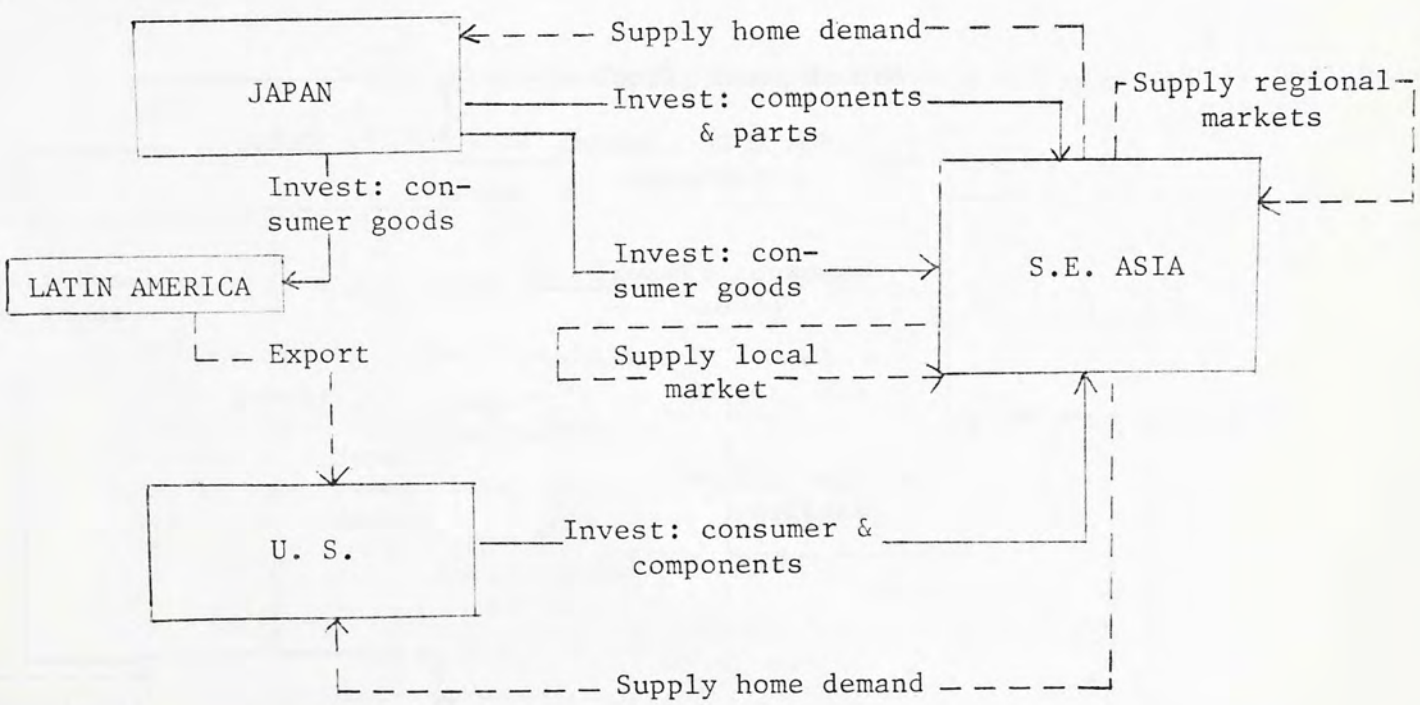
DIAGRAM V.1

RELATIONSHIP BETWEEN U.S. AND JAPANESE MULTINATIONALS TO S.E. ASIAN COUNTRIES

a) 1st stage: 1960-1964



b) 2nd stage: 1965-1969



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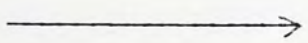
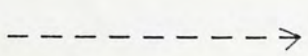
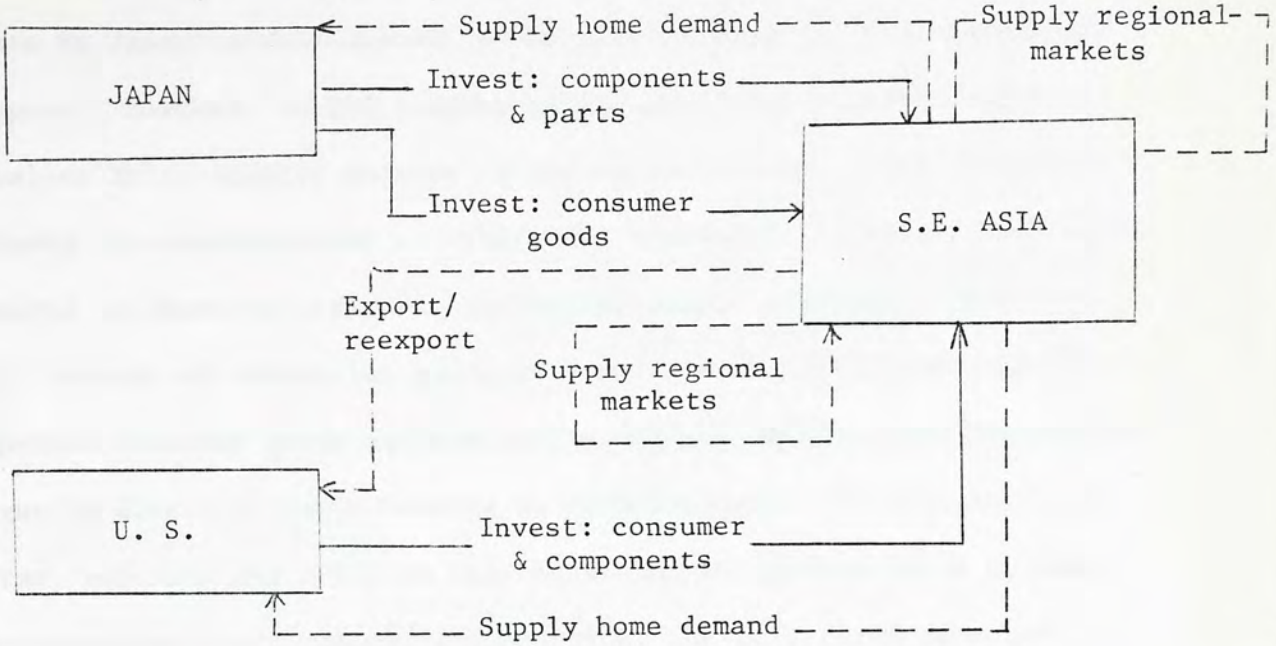


Investments by multinationals

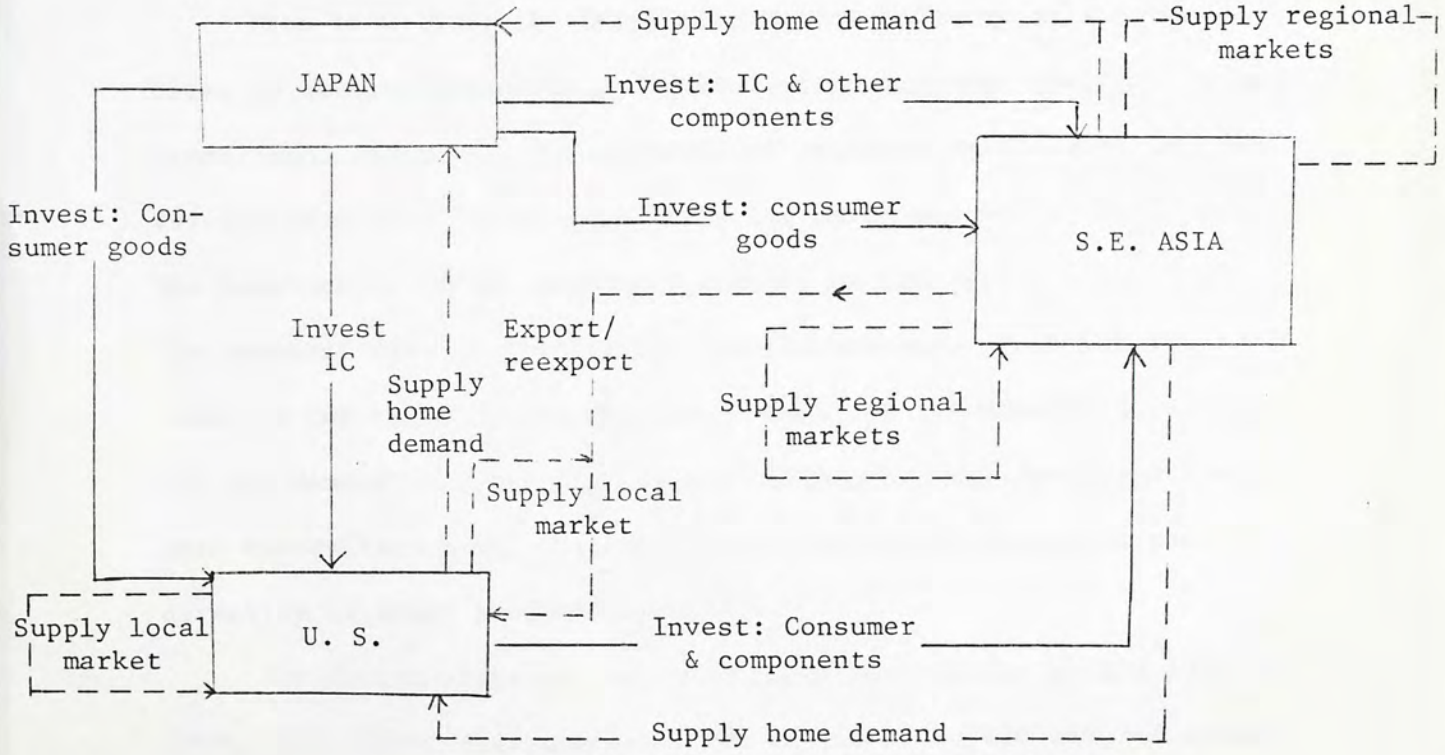


Supply to home demand, export or reexport

c) 3rd stage: 1970-1974



d) 4th stage: 1975-1979



about by the outward-looking policies of these countries. The investments by Japan in the consumer goods were still mainly for defensive purpose. However, in the components sectors, they began to supply to local or third-country markets in the region as many local governments pressed the manufacturers to obtain the components locally. They also catered to Japan in order to have better competitive power with the U.S. imports of industrial goods at home. As the restriction on Japanese consumer goods exports to U.S. became likely, some investments began to divert to Latin America as reexport base. For the American firms, emphasis was still on the industrial equipments goods at home. To strengthen their competitive position, the U.S. firms invested right on the centre of competition in the region heavily in the active components and computer parts sectors looking for cheap production costs.

From 1970-1974, the local electronics industry in the region began to develop gradually and even replace Japanese position in some traditional products. The emphasis of Japanese investments was then shifted gradually to the components and parts sectors to facilitate the development of the consumers sectors in the region accordingly. The reexport base to U.S. markets in the consumer goods was also found in the region. The pattern of American investments however, did not demonstrate any significant change, but the investments were more diversified among different countries of the region in the direction of lower production costs.

The fourth stage of the development covered the period 1975 to 1979. The electronics manufacturers of the NICs were matured enough to follow their own programmes of developments. Sometimes, they became keen competitors to the multinationals in the region. More investments from the American and Japanese firms poured into the LDCs.

Nevertheless, the pattern of their investments within the region was not much different from the third stage. Two distinct features emerged within the period. The first one was the so-called 'IC war' between U.S. and Japan,[23] which induced some Japanese firms to invest in U.S. to supply U.S. manufacturers as well as for self-use. Another feature was the appearance of Japanese investments of consumer goods inside U.S. so as to escape quota restriction — the American market was so large that neither Japanese nor NICs could afford to lose it.

d) Summary and Conclusion

The importance of multinationals to the development of electronics industry in the region is obvious. In terms of capital share, employments as well as export share, this remark stands well. We have not come to the extent of technology transfer and the effects on balance of payment, simply because we do not have sufficient information. The effects may be positive as the governments in the region still make efforts to attract more foreign investments in electronics in some selected areas implying that benefits for these investments are more than costs.

In comparing the rate of growth of the electronics industries among the countries in the region, as approximated by the rate of change in export, we can see that in the seventies, the LDCs are expanding faster than the NICs which in turn are faster than Japan. This is partly because foreign investments are driven by market forces to lower production costs areas and thus pouring into the LDCs at this time. Another argument, equally valid, was the late-comer thesis as the LDCs could learn from the experience of the NICs and be more

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[23] The term is used to describe the keen competition position of the two countries in the IC sector. The areas of competition are the manufacturing of cheaper, smaller and more powerful IC in the world.

effective in absorbing the foreign investments. Furthermore, the late-comers have a smaller base.

The foreign investments are believed to have carried out the tutor role successfully. The local electronics industries in many countries are found expanding at the rate faster than that of the foreign sectors. Consequently, the shares of the foreign investments are decreasing.

Among all the foreign investments in the region, the Japanese and American are by far the most important. Adding together, they virtually shape the pattern of development and determine the rate of change of the electronics industry in the region. For a long time, S.E. Asia had become the place of competition for the American and Japanese multinationals. The Kojima's 'trade vs anti-trade' thesis was over-simplified to describe their investments behaviour. Strictly speaking, both of their investments in the region are the result of oligopolistic joint action and reaction which in general followed the pattern of product cycle. Classified by nature of investments, the American were found more in the type of intermediate products markets internalization and always looking for lower cost production sites. On the other hand, many of the Japanese investments were induced to invest abroad because of restriction on their exports.

The development of the electronics industries in the region has altered the global equilibrium position in the industry. At present, the S.E. Asian countries together with Japan, the U.S., and the Western Europe as a whole are the three major powers of the electronics industry in the world.[24] Some sort of division of labor is apparent in the region: Japan for the advanced industrial and some innovative products, NICs for industrial equipments goods, components or

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[24] T. Hayashi & A. Suehiro, op. cit., pp. 1-12.

fashionable consumer goods, and the LDCs for the lower-end and labor-intensive products. As the countries in the region become more industrialized, new structural changes for the electronics industries are called for. Once again, the role of the multinationals is very important in this process. But, at this time, the recipient countries will not be as passive as before — more determination and better preparation are required by the local authorities and entrepreneurs to have an efficient transfer and assimilation of advanced technology.

In the case of Hong Kong, we can see that its growth of electronics industry is in fact a natural development process. This model is distinct in the region, as all the other countries have extensive schemes of government promotional policies. Nevertheless, the development of Hong Kong's electronics industry was still mainly due to the actions-reactions of the MN firms, particularly the U.S. and Japanese firms, in the region. In the early years of development, direct investments in the electronics industry by the MN firms were to make use the cheap and efficient labors in Hong Kong to supply the local market or to compete in the markets of the developed countries, in the consumer sector. Later on, the involvements were extended to the computer parts and semi-conductor sectors, which were pushed by the oligopolistic pressures of the MN firms also.

Started from the seventies, the importance of the MN firms in Hong Kong was shown to decline continuously. Yet, the influences of these firms were still very great but subtle. The technology transferred and the skilled workers and entrepreneurs thus trained by these firms were undoubtedly the cornerstones of the development of the local electronics industry. Moreover, the new structural change of the industry called for in the coming era is still heavily dependent on the participation of these firms. Investments of these firms in

the region were shown to have successfully exploited the relative comparative advantages of the different countries. Thus, the MN firms in fact determined the pattern of development of the electronics industry in each individual country. The development of Hong Kong's electronics industry in the past was in fact shaped by the joint-actions of these MN firms. Even though now the local firms have taken up a considerable part of the business, the role of MN firms as tutor in bringing in new technology will not diminish. Further elaborations on various aspects of the MN electronics firms in Hong Kong will be presented in the next chapter based on our direct survey.

CHAPTER VI

THE MULTINATIONAL FIRMS IN THE ELECTRONICS INDUSTRY OF HONG KONG - A SURVEY

a) Introduction

In Chapter 4, we have discussed the general situation of the overseas investments in the electronics industry of Hong Kong in comparison with the overseas participation in other industries as well as with the whole electronics industry. However, based on published statistics we cannot separate the investments of the multinational firms from the other foreign investments. Also, the statistics presented are too aggregate to give an in-depth analysis on the pattern, behaviour and characteristics of the multinational investments in the industry.

The weights of foreign investments in the electronics industry of the S.E. Asia were given in Chapter 5. At the same time, the importance of American and Japanese firms to its development was mentioned. But, owing to inadequate information, the strategies of the multinational investments, the relationships of the subsidiaries to their parent companies, as well as plans for future expansion in the case of Hong Kong cannot be elaborated.

Generally speaking, there are two approaches in the study of the behaviour of the multinational firms: the survey approach and the econometric approach.[1] In the econometric approach, all the necessary data must be available from reliable sources, and even so, the results

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[1] Lall & Streeten, op. cit., Chapter 2.

obtained are only the general investment patterns. Therefore, the only way out to bridge the gap of the study is to conduct a survey on the topic separately and thus to draw conclusions on the general behaviour of the MN firms in the industry. In this chapter, we try to present the survey results and the related analyses in the following sequence. In the next section, the methodology and limitations of the survey will be discussed. We try to follow the standard procedure of a social survey as far as possible.[2] Then, the basic results of the survey are presented concerning the backgrounds of the firms interviewed, the statistics of the production inputs and outputs, as well as the growth of the firms. Some descriptions concerning the behaviour of multinational investments are provided in the section that follows, based on the opinions given by the firms. In the end of the chapter, a brief summary and conclusion is given.

b) Methodology and Limitations

The survey is conducted by way of random sampling personal interview with a structured questionnaire. Its particulars are as follows:

i) The frame

The frame of the survey is based on the list of electronics factories with overseas interests according to the 1981 survey of the Trade, Industry and Customs Department of Hong Kong.[3] The size of population in the frame is 57.

Before we proceed further, some frame problems in the survey must be mentioned. The first problem is definitional, since the watches and clocks manufacturers, as well as some passive mechanical

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[2]For the reference of the survey methodology, see C.A. Moser & G. Kalton, "Survey Methods in Social Investigation", 2nd Edition, ELBS, 1979, or any other standard texts about the subject.

[3]The complete list of the factories in the frame is given in Appendix I.

components producers are not included in the frame. The second and the third problem are related to the lapse of time. The survey of this study is based on the factory list in the summer survey of TICD in 1981. By the time of our survey, which was conducted at the end of 1981, some foreign firms have already moved out of Hong Kong while some others have moved in.

ii) Sample and sampling procedure

The survey can be divided into three stages. First of all, letters were sent to all the firms in the population informing them of such a survey. Then, the factories in the list are arranged in some randomized order, so that the order of visits is also random. In order to make the results obtained from different firms comparable, two measures are taken — the field work period is deliberately kept short so that each firm under survey is facing similar environment, and only one interviewer, the author himself, is responsible for all the visits so that possible bias arising from different inverviewers are eliminated. Thus, the final stage is to arrange visits to these firms, as much as possible, within the limited field work period.

We had altogether contacted 30 factories, from which we obtained 23 successful interviews, 5 rejects, 1 had moved and 1 other was mis-classified into the electronics sector. In other words, 52.6% of the population was included in the sample, in which 76.7% were successfully interviewed.

iii) Questionnaire

Since the questionnaire is set as the guidance for the interviews, it is very crucial for the success of the survey. The process can be divided into 4 steps. Firstly, the basic information about the technical aspects of the industry had to be reviewed so as to get familiarized with the common language

used by the factory managers. Then, the general set-up of an electronics factory had to be known through various channels and for the same purpose. The draft questionnaire came out in the third step after special reference to questionnaires of similar nature.[4] Lastly, a pilot survey was made by a telephone interview with a local electronic firm before the completion of the final copy of the questionnaire.[5]

iv) Field work proper

Each factory visited was contacted at least thrice, informed by letter, explained and arranged date of visit by telephone conversation, and interviewed during the field work period. It was hoped that through the various contacts, some sorts of understanding could be established so that the persons interviewed were more willing to reply. Since the questions raised were quite general and concerning the investment strategies and plans for growth, top rank management staff were requested for interviews. In 21 out of 23 firms visited, the interviewees were in the grade of manager or above. It was interesting to note that they were generally quite young in age (mostly in their early 30's), showing the young and growing nature of the industry. The period of field work lasts from 10 December 1981 to 13 January 1982.

v) Analysis of data

The data collected were edited immediately after the interview in order to check on internal consistency and with information collected from other sources. As the absolute sample size was

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[4]The questionnaires used for reference are from the Hong Kong Productivity Centre, Trade, Industry & Customs Department and also B. I. Cohen, op. cit., p. 150.

[5]The fair copy of the questionnaire for our survey is given as Appendix II.

quite small, some standard tools of statistical analysis, such as chi-square association test and regression analysis could not be applied. Rather, the results are tabulated and presented in tables as shown in the subsequent sections.

vi) Evaluation

Though the survey was carefully planned in every step, biases of different nature are not easy to avoid.

Some frame problems as mentioned above cannot be overcome, and thus reservation must be borne in mind. However, the firms moving in or out of Hong Kong during this half year are believed to be small in number. Besides, the technology level and the operational details of the watches and clocks do not differ much with the other electronics consumer goods. Therefore, errors due to the frame problems are not serious.

The other source of bias may come from the non-response error. Strictly speaking, there are two types of non-response errors in our study. The first type is well-known. The firms which rejected our interviews made us short of informations on them, and biases may be serious if they have certain common attributes causing them to reject the interviews. As we have no prior information about these firms, we have just to assume that no systematic biases come from these firms, i.e. rejects are only due to some randomized internal factors. The second type error is more subtle. The firms existing now are only the successful firms, the failing firms had already moved out Hong Kong. Thus, we cannot get the response from these failing firms and analyse why they fail. Of course, we may classify this type of non-response error as just another sort of frame problem.

Though certain measures are taken to reduce the response error — minimize the interviewer bias and errors due to

mis-understanding of the questions — some biases of this type cannot be avoided in our level. The persons answering the questions may not know a lot of the companies in every aspects, and they have no obligation to search for the pieces of information specially for the interviews. Besides, they may not disclose the information which they think that it is a secret of the company. Most serious of this sort is the very fact that many of the important decisions are not made and even not talked about with the top management staff of the Hong Kong subsidiaries. Thus, the information collected may not be from the hearts of the multinationals. Nevertheless, the pieces of information collected do reflect the thinking of the top people of these subsidiaries.

c) Results and Analysis

i) Background

Among the 23 firms visited, it was found that 21 of them have parent companies outside Hong Kong, the other 2 are locally based — one was initiated by a Japanese in Hong Kong while the other emerged from a trading company located here with its shareholders from U.S. If the sample we use is unbiased, then 91.3% of the overseas investments in electronics, in terms of number of establishments, are undertaken by multinational firms. This dominant position of the MN firms is more conspicuous if evaluated in terms of employment size. Among all the workers in the firms of overseas interests, 99.5% of them are employed by the multinationals. Hence, these phenomena support our previous assumption that overseas investments are virtually equivalent to multinational investments. As our focus is on the multinationals, therefore, in all of the subsequent analyses, only the 21 firms with parent companies outside Hong Kong are studied.

The distribution of these 21 firms are presented in Table VI.1. By country, American investments are obviously the largest, accounting for two thirds of the firm. Japanese investments have a share of 23.8% and come next, while those of Australia and Netherland are also found but insignificant in number. By types of products, the larger part of investments are found in the consumer goods sector (47.6%), either in parts manufacturing or final assembly. The others, such as computer parts or semi-conductor manufacturing also share a significant portion. The final assembly of the equipment goods and the manufacturing of the passive mechanical components only share 14.3%.

The time path of the investments is given in Table VI.2, showing the commencing years of production in Hong Kong for these 21 firms. No systematic pattern for the timing of investments by products has been found as the investments for consumer parts and final assembly, computer parts, and semi-conductor are quite evenly distributed. For the final assembly of equipment goods and in the passive mechanical components sectors, investments are insignificant from time to time. However, some patterns can be observed by country base. All investments before 1971 were undertaken by American firms showing their initial interest in Hong Kong as the target of investments at that time, while firms from other countries were not strong enough to make extensive overseas investments. The position of American investments declined since then and in fact there was no investment between the period 1975-78 probably due to the oil crisis. There are some further American investments in recent years, but they are either much smaller in initial capital involvement or inclined to invest in joint ventures with strong local partners.[6] Japanese

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[6]These local partners are either public corporations or groups with long history in Hong Kong.

TABLE VI.1

DISTRIBUTION OF THE MULTINATIONAL FIRMS IN ELECTRONICS UNDER SURVEY - BY COUNTRY AND PRODUCTS

Products	U. S.	Japan	Australia	Netherland	Total
Consumer goods - parts	3	2	0	0	5 (23.8)
final	3	1	0	1	5 (23.8)
Equipment goods - parts	4	0	0	0	4 (19.0)
final	0	1	0	0	1 (4.8)
Components - passive	1	0	1	0	2 (9.5)
semi-conductor	3	1	0	0	4 (19.0)
Total	14 (66.7)	5 (23.8)	1 (4.8)	1 (4.8)	21 (100.0)

Note: The figures in parentheses are the percentages of the total.

Source: Survey.

TABLE VI.2

TIME PATH OF MULTINATIONAL INVESTMENTS

Year	CONSUMER GOODS Parts	CONSUMER GOODS Final	EQUIPMENT GOODS Parts	EQUIPMENT GOODS Final	COMPONENTS Passive	COMPONENTS Semi-Conductor
1963		U.S.*				
1964					U.S.	
1965						
1966						
1967		U.S.				U.S.
1968	U.S.		US/HK			
1969						U.S.
1970	U.S.		U.S.			
1971						
1972		Japan				
1973	Jap/HK					U.S.
1974			U.S.			
1975					Aust.	
1976						
1977						Japan
1978	Japan					
1979		U.S.		Japan		
1980	US/HK	US/HK				
1981			U.S.			

Note: i) The country stated is the country of the multinational making the investment at that year in the specified sector.
ii) When more than one countries are stated in the space, it denotes that the investment is made by joint-venture from these countries.
iii) *This company was initiated by an U.S. firm, but was later purchased by a Netherland firm.

Source: From survey.

investments began to exist only in the early 70's. It appeared that the oil crisis also deterred Japanese investments in the mid-70's. Noteworthy, there is no Japanese investment in Hong Kong since 1979.

The types of ownership for these investments are given in Table VI.3. Most of the investments are in the type of wholly-owned rather than the joint-venture. Contradictory to what Kojima asserts, the percentage of U.S. wholly-owned subsidiaries is not greater than that of Japan.[7] As most of the U.S. joint-venture investments are only founded in 1980, it is possible that some change in investment strategy for the American investments is under way gradually.

Table VI.3

OWNERSHIP TYPE OF THE MULTINATIONAL INVESTMENTS
— BY NUMBER OF FIRMS

Ownership Type	U. S.	Japan	Aust.	Neth.	Total
Wholly-owned	11 (78.6)	4 (80.0)	1 (100.0)	1 (100.0)	17 (81.0)
Joint-venture	3 (21.4)	1 (20.0)	0 (0.0)	0 (0.0)	4 (19.0)
Total	14 (100.0)	5 (100.0)	1 (100.0)	1 (100.0)	21 (100.0)

Note: The figures in parentheses are the percentage of the total.

Source: Survey.

The size of the multinational investments can be measured in terms of initial capital involvement and employment size. Strictly speaking, the initial capital investments are not a good indicator for the comparison of size since the firms invested

[7] K. Kojima, op. cit., pp. 77-82.

in Hong Kong in different period of time and the amounts reflected neither the total cash flow of the subsidiaries nor their strengths in technologies and international connections. Nevertheless, from Table VI.4a, it can still be seen that the U.S. firms are found greater in this value than the investments from other countries though the American investments are usually established earlier in the sixties. It is interesting to note that all the firms reluctant to disclose their initial capital involvements belong to the group of American semi-conductor firms.

Perhaps, the better indicator for the size of the operation is employment. As the commencing years for the firms are different, and thus comparison of this sort is not very meaningful, therefore, the comparison of employment size at the time of survey is used. Of course, a capital-intensive firm may have very large scale of production with rather little employment size, but this case is very scarce in the electronics sector of Hong Kong. This can be illustrated by the positively correlated relationship between employment size and production value.[8] As commonly expected, the final assembly of consumers goods, the manufacturing of computer parts and semi-conductor are largest in the scale of operation, as shown in details in Table VI.4b. If evaluated by country, it can be seen that the Netherland and U.S. firms are much larger in scale showing the dominant position of these countries. This position is more obvious in the aspect of total employment, as they totally account for 93.7% of the total employment size by all the multinationals.

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[8]The simple correlation between production value and employment size for all the firms is +0.74. For U.S. firms alone, the value is +0.78, but the value is -0.12 for the Japanese firms alone. This phenomenon implies that Japanese firms are not involved heavily in the actual production but in trading or otherwise, while U.S. firms or others do.

TABLE VI.4a

SIZE OF THE MULTINATIONAL INVESTMENTS
- BY THE VALUE OF INITIAL CAPITAL*
(HK$Mn)

Products \ Country	U. S.	Japan	Australia	Netherland	Total
Consumer - parts	13.5 (4.5)	1.8 (0.9)	--	--	15.3 (3.1)
final	41.6 (10.4)	0.4 (0.4)	--	--**	42.0 (8.4)
Equipment - parts	11.2 (2.8)	--	--	--	11.2 (2.8)
final	--	7.5 (7.5)	--	--	7.5 (7.5)
Components-passive	1.0 (1.0)	--	2.0 (2.0)	--	3.0 (1.5)
semi-cond.	***	2.0 (2.0)	--	--	2.0 (2.0)
Total	67.3 (5.6)	11.7 (2.3)	2.0 (2.0)	--	81.0 (4.5)

Note: * The rate of foreign exchange for the initial capital flow are converted based on p. 266, Appendix 5, Hong Kong 1982, Hong Kong.

** As the Netherland firm was initially the subsidiary of an U.S. firm, and therefore it was counted under the category of U.S.

*** Some factories refused to disclose the value of their initial capital involvements (3 amongst the 21). It is interesting to note that all these firms are belonging to the same group — the U.S. semi-conductor manufacturers.

The figures in parentheses are the value of initial capital per establishment.

Source: Survey.

TABLE VI.4b

SIZE OF THE MULTINATIONAL INVESTMENTS
- BY EMPLOYMENT SIZE AT PRESENT

Products \ Country	U. S.	Japan	Australia	Netherland	Total
Consumer - parts	1,560 (520)	160 (80)	--	--	1,720 (344)
final	4,320 (1,440)	469 (469)	--	1,600 (1,600)	6,389 (1,278)
Equipment - parts	3,110 (778)	--	--	--	3,110 (778)
final	--	140 (140)	--	--	140 (140)
Components-passive	400 (400)	--	48 (48)	--	448 (224)
semi-cond.	2,350 (783)	80 (80)	--	--	2,430 (608)
Total	11,740 (839)	849 (170)	48 (48)	1,600 (1,600)	14,237 (678)

Note: The figures in parentheses are the employment sizes per establishment.

Source: Survey.

Table VI.5 below gives the concentration of the multinational investments, measured by the portion shared by the seven largest firms, and the criterion to be large is according to their value of production. The distribution of the largest firms also follows our usual expectation — in the final assembly of consumer goods, in equipments parts and in semi-conductor. In terms of employments size, production value, and factory area as well, these firms together share about two-thirds of the total value. This phenomena unambiguously demonstrate the high concentration nature in the multinational investments in the industry.

Table VI.5

CONCENTRATION OF THE MULTINATIONAL INVESTMENTS — PORTION SHARED BY 7 LARGEST FIRMS BY PRODUCTION
(% of the grand total)

Classified By	Final Assembly of Consumer Goods	Parts for Equipments Goods	Components-Semi-conductor	Total
a) Distribution (no. of firms)	2	2	3	7
b) Employment	35.82	18.26	14.26	68.34
c) Production value	24.55	33.72	13.42	71.69
d) Factory area	24.42	21.78	15.37	61.57

Source: Survey.

ii) Models of investments

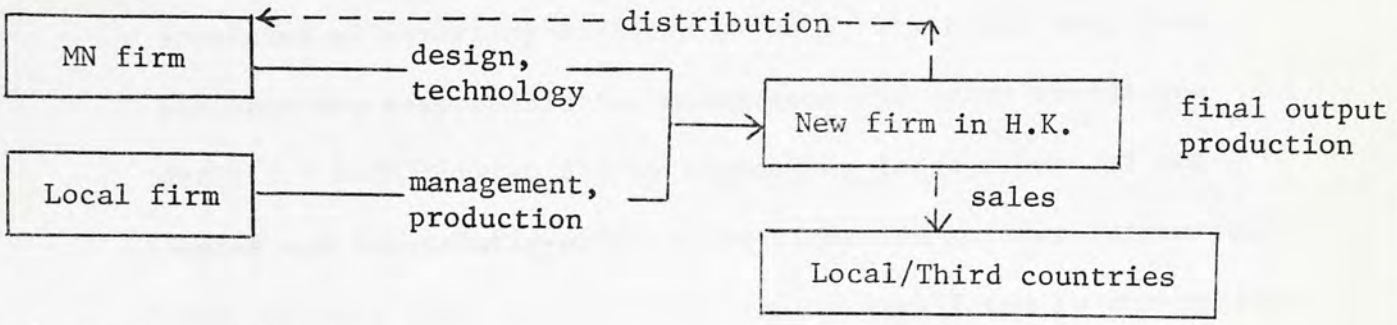
Based on the relationship of the local subsidiaries to the parent firms and to the subsidiaries in the region, the multinational investments in Hong Kong can be classified into 4 types, as illustrated in Diagram VI.1.

The most independent of all is the joint-venture model, by which we only include the firms that the equities shares of the

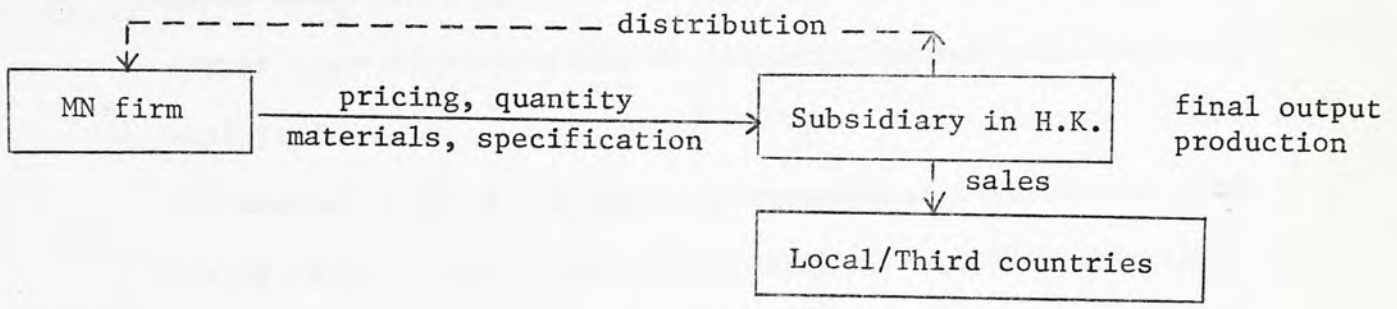
DIAGRAM VI.1

DIFFERENT MODELS OF MULTINATIONAL INVESTMENTS IN H.K.

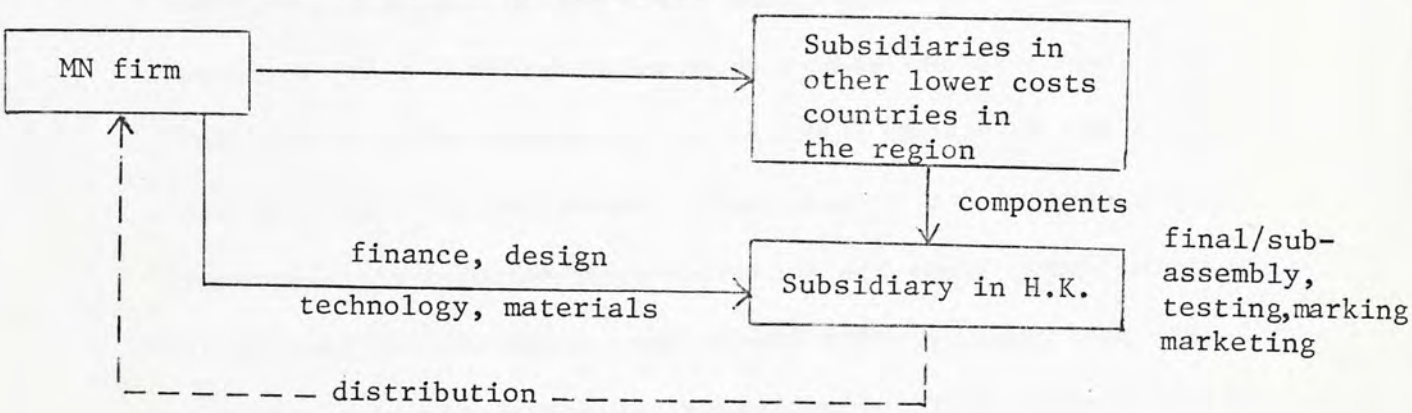
a) Joint-Venture Type



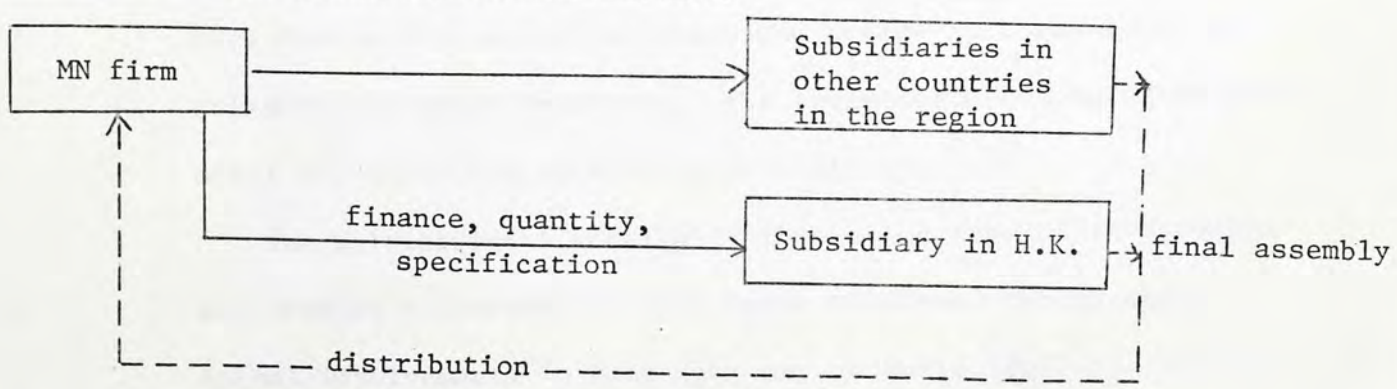
b) Simple Transnational Type



c) Multinational Vertically-integrated Type



d) Multinational Horizontally-integrated Type



Key: ——→ direction of investment

- - - - - - - → distribution of output

foreign and local partners nearly break half. This model has arisen only in the recent years in U.S. related firms in which the MN firms are responsible for the designs, technology and providing of marketing channels as well, while the Hong Kong partners are responsible for management and other production details. Both parties are by themselves large groups of companies and the jointly-established firms are not much different from ordinary local firms. They are usually found in the consumer goods sector so that the advantages of superior management and better regional connections of the local partners can be fully exploited.

Another type is the simple transnational investments. The parent firms in this model are usually much smaller than the latter two types, and the local subsidiaries are usually their only subsidiaries outside their home countries. Either wholly-owned or joint-venture types of ownership can be found, but in the case of joint-ventures, the equities shares of the outsiders are dominant. As the parent firms usually do not have good experience in international operation and their commitments are in general not too heavy, the subsidiaries in Hong Kong are enjoying a higher degree of independency. They have to fulfil the requirements of the parent firms, but they are allowed to have independent marketing teams and decide by themselves the sales to the other countries. The investments belonging to this model are quite diversified in products types.

The multinational vertically integrated type of investments are usually undertaken by very large MN firms, though their actual involvements in Hong Kong may be quite limited. Wholly-owned subsidiaries are preferred so that more control can be exercised. The parent firms are also found investing in other

lower costs countries in the region in the components and parts sectors to supply to the plants in Hong Kong. The finance of the local subsidiaries are tightly controlled by the parent companies and only little cash flows are found in local plants. The designs, technologies, and the supply of raw materials almost solely come from the parent groups, and the local plants, in effect, are only the centre for final assembly, testing, marking or marketing. The distribution of the final outputs are also determined by the parent firms. The investments are usually found in the higher skills sectors, such as the parts for higher end consumer goods, the computer parts, and the semi-conductors as well.

The fourth type is called the multinational horizontally integrated model. Again, the investments are undertaken by very large MN firms and wholly-owned subsidiaries are preferred. Similarly to the type above also, the designs, the quantities required, and the supply of raw materials are determined by the parent companies, and there is little cash flow to the local plants. The firms also have other plants in the region but they are horizontal in nature — of the same products but different models. The investments are exclusively found in the final assembly of consumer goods sector. One distinctive feature of this sort is that the technology transfer of the investments are very limited and sometimes the transfers of technology back to the parent firms are also found.

The distribution of the types of multinational investments, by country and by product, are given in Table VI.6a & b. It is worth noting that 50% of the American investments are found in the type of simple transnational, while 60% of Japanese investments are multinational vertically integrated. To account for

TABLE VI.6a

TYPES OF MULTINATIONAL INVESTMENTS - BY COUNTRY
(No. of firms)

Types \ Country	U.S.	Japan	Aust.	Neth.	Total
a) Joint-Venture	2	0	0	0	2 (9.5%)
b) Simple transnational	7	1	1	0	9 (42.9%)
c) Multinational Vertically Integrated	4	3	0	0	7 (33.3%)
d) Multinational Horizontally Integrated	1	1	0	1	3 (14.3%)
Total	14	5	1	1	21 (100.0%)

TABLE VI.6b

TYPES OF MULTINATIONAL INVESTMENTS - BY PRODUCT
(No. of firms)

Types \ Products	C-P	C-F	E-P	E-F	P-C	S-C	Total
a) Joint-Venture	1	1	0	0	0	0	2
b) Simple transnational	2	1	3	1	2	0	9
c) Multinational Vertically Integrated	2	0	1	0	0	4	7
d) Multinational Horizontally Integrated	0	3	0	0	0	0	3
Total	5	5	4	1	2	4	21

Note: The abbreviations of C-P, C-F, E-P, E-F, P-C, S-C stand for Consumer parts, Consumer final assembly, Equipment parts, Equipment final assembly, Passive components, and Semiconductor respectively.

Source: Survey.

these, we have to consider the motivations of their investments. The simple transnational investments of the U.S. are looking for the low costs production area (lower than home country), while the Japanese are looking for the division of work within the region so as to achieve market internalization. The joint-venture model is only found in the American investments and appears only recently indicating that the U.S. firms are beginning to initiate a new strategy such that a better mix of the comparative advantages is emphasized for direct investments abroad. The distributions of the investments by products are consistent with the description of the characteristics of the models above. It is possible that different investments can be made in Hong Kong by different divisions of the same group, with each of them belonging to different investments models.

iii) Production inputs

The inputs for production include the following: the finance, the premises for production, labor and skill, the material required for manufacturing, and technology and R & D.

Except for the subsidiaries of the joint-venture model in which independent financial policies are exercised, all the subsidiaries in the other models are under strong influences of the parent companies. The extent of influence is less severe for the simple transnational type of investments. As the information about the financial situation for these firms are seriously inadequate, we can only present some qualitative statements after all. In general, the linkages of finance can be found in the following three aspects. Firstly, the funds for the commencing operation came from the initial capital investments of the parent companies. Secondly, the daily operational expenses are from the actual cash flow of the

subsidiaries, but the amounts are quite insignificant as most of the flows of money are in book value only. Consequently, the finance for the further expansion of the subsidiaries are also from the parent firms which in fact may be retained earnings. Finally, the policies of transfer pricing are frequently found between the parent firms and the subsidiaries in the form that the prices of raw materials inputs or final outputs are deliberately set higher or lower than the market prices so as to shift profits within the group for the purposes of escaping taxes and so on.

Table VI.7 gives the data for the manufacturing premises of the multinationals. For each establishment, there is only one plant, except in the case of U.S. which has 1.29 plants per establishment. The investments from U.S. and Netherland are found larger in average areas, and the factory area is found positively-correlated with the value of production.[9] By product, the same results are also found for the final assembly of consumer goods, computer parts and semi-conductor manufacturing as well. The majority of the plants are rented showing that many of the multinationals still do not commit heavily here.

The statistics concerning the labor input of the multinationals are given in Table VI.8a & b. The distribution of employment size by country and by product are consistent with what we have found so far. The ratios of other employee to operatives are higher for Japanese and Australian firms showing that less skilled workers are employed by them. But, the ratios are found much lower for the sectors of equipment goods and semi-conductor illustrating the higher skilled nature of

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[9] The value of simple correlation for factory area and the production value is +0.76 for all the firms.

TABLE VI.7

MANUFACTURING PREMISES OF MULTINATIONALS
- BY COUNTRY AND PRODUCTS
(in the period of survey)

Classified By	Average No. of Plants	Average Area of Factory (Ft^2)	Percentage of Plants Leased
a) COUNTRY			
U. S.	1.29	66,080	77.8%
Japan	1.00	25,600	80.0%
Australia	1.00	16,000	0.0%
Netherland	1.00	162,000	100.0%
b) PRODUCTS			
Consumer - parts	1.20	25,600	100.0%
final	1.20	73,250	66.7%
Equipment - parts	1.20	85,000	80.0%
final	1.00	50,000	0.0%
Components - passive	1.00	40,000	50.0%
semi-cond.	1.25	68,500	80.0%
Total	1.19	58,250	76.0%

Source: Survey.

TABLE VI.8a

LABOUR INPUT OF THE MULTINATIONALS
- BY COUNTRY & PRODUCT
(in the period of survey)

Classified By	Total Employments	Ratio of Other Employee to Operatives	Number of Expatriate per '000 Employee
a) COUNTRY			
U.S.	11740 (82.5%)	1 : 2.35	2.53
Japan	849 (6.0%)	1 : 3.25	47.85
Australia	48 (0.3%)	1 : 5.00	20.83
Netherland	1600 (11.2%)	1 : 3.00	1.88
b) PRODUCT			
Consumer - parts	1720 (12.1%)	1 : 5.12	20.99
final	6389 (44.9%)	1 : 3.68	3.98
Equipment - parts	3110 (21.8%)	1 : 2.75	0.81
final	140 (1.0%)	1 : 2.04	64.29
Components - passive	448 (3.1%)	1 : 3.57	10.42
semi-cond.	2430 (17.1%)	1 : 0.63	27.22
Total	14237 (100.0%)	1 : 2.46	14.74

Note: The figures in parentheses are the percentages of the total.

Source: Survey.

TABLE VI.8b

ANNUAL TURNOVER RATES OF THE OPERATIVES
(% of the total operatives)

Products \ Country	U. S.	Japan	Australia	Netherland	In Average
Consumer - parts	47.5	13.0	--	--	30.3
final	26.7	20.0	--	30.0	26.0
Equipment - parts	45.0	--	--	--	45.0
final	--	50.0	--	--	50.0
Components - passive	--	--	20.0	--	20.0
semi-cond.	80.0	70.0	--	--	76.7
In average	47.2	33.2	20.0	30.0	40.1

Notes: i) The response rate to this question is 76.2%

ii) The average value is taken when there are more than one firms in the entry.

Source: Survey.

these products. In comparing the statistics as provided in the previous chapters,[10] one important conclusion is that the multinational firms are employing more and more skilled workers at a speed much faster than the overall industry, and this shift is very crucial for the structural change of the electronics industry in Hong Kong as the multinationals again lead the industry in the exploration of the more-skilled and higher end products sectors.

The number of expatriates per thousand employee are found exceptionally high for Japanese and Australian investments. This phenomenon can be explained by the geographic distance of the parent firms to the Hong Kong subsidiaries and the extent of localization for these branches — the longer the period of establishment in Hong Kong the greater the extent of localization. The same explanations can also be used to account for the differences by products.

One of the most troublesome problems to the multinationals — or to the whole industry in fact — is the high mobility rate of the operatives. The annual turnover rates for the multinationals are given in Table VI.8b. This phenomenon is basically the result of the keen competition in the market for female operative workers. The situation is aggravated in the case of MN firms as the decision makers are not familiar with the local condition in the first place and not really concern with the problem in the other. However, as the problem is becoming so serious that actual production process is hindered, different approaches

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[10] In Table IV.8, the ratios for the year 1974 are 1:6.9 for overseas firms and 1:3.1 for the overall industry, showing that the overseas firms are more unskilled labor-intensive than the overall industry, but in Table III.4 for 1980 figure, the ratio is 1:3.3 for the whole industry showing little improvement for the skill levels so far. But the value of 1:2.46 in Table VI.8a is a very spectacular change indeed.

have to be taken by the local management. Firstly, as male workers are believed to be more stable than young women, more firms begin to increase the portion of the male operatives. Parallel to this change is the better training and promotional prospects for the male workers. Secondly, vertical human relationship has to be improved and more workers' participation in a wider perspective are encouraged. Many firms have already applied the techniques of quality control circle[11] so as to improve the quality and productivity and to reduce the mobility rates as well. Thirdly, some factories begin to introduce the piece work scheme into the production process so as to increase the wages of the workers by stimulating their work incentives and thus to stay longer.

Table VI.9 gives the statistics for the other production inputs. Despite the ratio of skill levels as presented in Table VI.8a, the average R & D percentage is another measure of the technology levels between different investments. Japanese and Australian firms simply report nil in this percentage implying that they only treat Hong Kong as an assembly base or a trading centre but not a production centre by its own. By product type, we have found that the components sector, and the final assembly of consumer and equipment goods sector are very low in this figures showing the manufacturing process of these products are standardized indeed.

The percentages of imported materials to total purchase of raw materials are very high in general and are especially high in the computer parts and semi-conductor manufacturing sectors

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[11] From K.K. Tse, "Harnessing Quality Circles for Higher Quality and Productivity — Lessons from Japan," Hong Kong Industrial Relations Association, 1981. (pp. 1-20)

TABLE VI.9

OTHER PRODUCTION INPUTS -
PERCENTAGES R & D EXPENSES AND IMPORTED MATERIALS
(in the period of survey)

Classified By	Average R & D to Total Production Cost (%)	Average Imported to Total Purchase of Raw Materials (%)
a) COUNTRY		
U.S.	6.75	80.21
Japan	0.00	85.00
Australia	0.00	40.00
Netherland	7.00	50.00
b) PRODUCT		
Consumer - parts	8.00	81.25
final	1.80	56.00
Equipment - parts	12.50	95.75
final	0.00	80.00
Components - passive	1.75	60.00
semi-cond.	1.75	91.25
Total	5.08	77.65

Source: Survey.

simply because the raw materials required are more advanced and cannot be obtained locally. The figures for the final assembly of the consumer goods and passive components sectors are relatively low as the plastic casing, the cable, the PCB (printed circuit board), etc. can be supplied locally. Nevertheless, in comparing with the values of the commencing years, there is evidence that the degree of dependency on imported materials is declining for all the products of the MN firms in Hong Kong.

iv) Outputs

The values of the production outputs of the multinationals are given in Table VI.10. The pattern of the size of the annual production value per establishment is the same as before. U.S. and Netherland firms are the largest, by country, while final consumer goods, computers parts and semi-conductors manufacturing are much larger, by product. In average, two thirds of the production values are in the consumption of materials inputs and supplies of industrial services and thus overall value-added percentage is not very high. As nearly 80% of the materials have to be imported, hence about half of the production values are from outside of Hong Kong. The value-added percentage is exceptionally low for the Japanese firms, showing that they usually use Hong Kong only as a transit for their regional operations.

Table VI.11 gives the distribution of the production outputs. Apart from the passive mechanical components in which a third is for local sales, most of the products are for export, especially the equipments goods and the final consumer goods. The export-oriented pattern of production is the same even if considered by country. However, the portions shipped back to parent firms are very different, no matter by country or by product. The Japanese

TABLE VI.10

PRODUCTION OUTPUT OF THE MULTINATIONALS
(in period of the year before the survey)

Classified By	Annual Production* Value per Establishment (HK$Mn)	Average Percentage** of Value-Added to Total Production (%)
a) COUNTRY		
U.S.	262.8	42.50
Japan	79.0	21.88
Australia	6.7	45.00
Netherland	192.0	25.00
b) PRODUCT		
Consumer - parts	45.6	37.50
final	273.3	31.25
Equipment - parts	433.2	41.67
final	5.0	15.00
Components - passive	14.4	42.50
semi-cond.	216.2	41.25
Total	230.2	36.41

Notes: * The exchange rate is taken from the average value of the period Dec. 1980 to Nov. 1981, the year just before the survey.

** The value-added is defined as the gross output value in deduction of the value of consumption of materials and supplies and industrial services. For this question, only 76.2% of the firms surveyed reply, and therefore the results should be accepted with reservation.

Source: Survey.

VALUE VI.11

DISTRIBUTION OF THE PRODUCTION OUTPUT
(%)

Classified By	Average Export Percentage to Total Production	Average Percentage of Value Back to Parent Co. to Total Production
a) COUNTRY		
U.S.	91.43	74.07
Japan	83.80	1.00
Australia	100.00	100.00
Netherland	100.00	100.00
b) PRODUCT		
Consumer - parts	89.60	31.00
final	99.40	79.40
Equipment - parts	100.00	86.25
final	99.00	0.00
Components - passive	67.50	52.50
semi-cond.	80.00	60.00
Total	90.43	59.14

Source: Survey.

firms are very distinct — they actually never export back to their home country. Except for the computer parts and the final consumer products, the percentages for the other products are not very high, as many branches are using Hong Kong as a base to supply the third countries. And these percentages are found decreasing among all the firms in comparison with the initial period of establishment, implying that the subsidiaries are expanding their sales and diversifying their outlets of distribution gradually when they are in Hong Kong.

v) Dynamics of the multinationals

Though the MN firms are so much different in the years of establishments, the product nature and the country origin, the major reasons for them to keep staying here are not much different. 57.1% of them frankly report that they stay here largely because they have already established in Hong Kong. Another 33.3% stay either because the firms are locally based or they are looking for the local or regional markets. Lots of other standard reasons are raised at the same time — low tax, laissez-faire policy of the government, good infrastructure, better supporting facilities, competitive in productivity-cost mix, etc.

In fact, the principal reason to keep them staying here is the tremendous growth rates of these MN firms in Hong Kong. In Table VI.12, the average growth rates per annum in terms of employment, production values and factory area since their establishment are given. By country, the U.S. firms are the most impressive, and the Japanese firms are also good. By product, again, the final products of the consumer goods, computer parts and semi-conductors manufacturing are found much better. Considered according to the year of establishment, however, we can find that the firms invested earlier are slower in the rates of

TABLE VI.12

GROWTH OF THE MULTINATIONALS (%) PER ANNUM

Classified By	Average Annual Growth Rate of Employment	Average Annual Growth Rate of Production Value	Average Annual Growth Rate of Factory Area
a) COUNTRY			
U.S.	29.7	42.4	17.5
Japan	30.2	29.5	10.8
Australia	5.4	17.9	8.1
Netherland	15.8	21.7	16.7
b) PRODUCT			
Consumer - parts	12.0	16.5	3.4
final	53.1	65.4	19.6
Equipment - parts	15.9	41.2	18.5
final	87.1	--	0.0
Components - passive	5.7	13.2	6.2
semi-cond.	17.8	34.8	26.7
c) YEAR OF INVESTMENT			
Before 1970	12.8	12.3	13.0
1970 - 1976	12.4	33.9	18.5
1977 - 1981	63.7	97.4	12.4
d) THE 7 GREATEST FIRMS	21.0	35.4	25.9
Total	27.9	36.4	15.4

Source: Survey.

growth showing that their developments have already levelled off, while the firms of more recent arrival have tremendous growth in employment and production value but not in the factory premises. This phenomenon can be explained well. The latest establishments must invest in the sectors of rising comparative advantages. The spiral increase in land price in recent years has deterred the expansion in manufacturing premises but they can turn to products of much higher value. For the seven largest firms as mentioned before, the growth rates in these three aspects are high and steady.

It is frequently complained by many manufacturers in Hong Kong that the overall climate is not favourable to the manufacturing sector and the competitive power of Hong Kong is becoming weaker than the other countries in the region. Nevertheless, in the face of this short run difficulty, 50% of the MN firms in Hong Kong still report to have expansion plans in these two years. The distribution of these firms are given in Table VI.13. It is obvious that the U.S. firms are the most optimistic. This result should not be a surprise as they begin to change their policies of investments here, either to seek a strong local partner for joint-venture or to shift to more advanced equipment goods manufacturing. By product sector, the pattern is much more clear cut, more for equipment goods and least for the consumer goods, a pattern consistent with the general opinions about the industry.

Investments in Hong Kong are always overshadowed by a long run uncertainty — the 1997 issue. This uncertainty also applies to the investments in electronics industry by the MN firms. In answering this question, 42.1% of them reply that they have confidence in a solution to the problem satisfactorily, while

TABLE VI.13

DISTRIBUTION OF FIRMS HAVING EXPANSION PLAN
IN H.K. IN THESE TWO YEARS
(No. of firms)

Products \ Countries	U. S.	Japan	Aust.	Neth.	Total
Consumer - parts	1	0	0	0	1 (20%)
final	1	0	0	0	1 (20%)
Equipment - parts	4	0	0	0	4 (100%)
final	0	1	0	0	1 (100%)
Components - passive	1	0	0	0	1 (50%)
semi-cond.	2	0	0	0	2 (50%)
Total	9 (64.3%)	1 (20%)	0 (0%)	0 (0%)	10 (50%)

Note: Twenty out of the twenty-one firms reply to this question. The figures in parentheses are the percentages of the sub-total of the category.

Source: Survey.

57.9% admit that they are uncertain and thus worry about the outcome. However, all of them regard the problem as too remote to consider now. Except those which are locally-based or looking for local market, the MN firms are in fact making preparations for the issue. The planning periods are usually short, say 3 to 5 years, and the break-even periods for the investments are short as well. Many firms do not put the major production here so that they can move out rather easily. Even they may have expansion plans, but most of them avoid making too heavy involvements here. In other words, the issue does have some far-reaching effects after all.

vi) Comments on statements

Throughout this and the previous chapters, we have tried to formulate the behaviour and pattern of the MN investments, based on the statistics and observations. However, some of these formulations are not easy to verify, if they are qualitative in nature. One way to illustrate them is to put these formulations into statements, and put these statements to ask the MN firms for their comments.

The first aspect requiring them to make comments concerns the technology transfer, which can be divided into two areas, the management techniques of the plants and the actual production of the products. The factory management is automatically transferred when the plants start running, and therefore, our concern of transfer is on the production side. In fact, there are three levels of production technology — at the design, research and development level, at the knowhow on the existing production line level, and at the simple repetition level. We do not regard the last as the transfer of technology, as this is manual, simple and standard. We do, however, count the middle as a transfer

though it is insignificant and insufficient. The most significant transfer is not merely to know how to run the existing production lines but also to develop and improve the existing ones. It is based on the above discussion that the following statement is made:

"The transfer of technology in production by the foreign electronics firms to Hong Kong is very little or insignificant."

47.6% of the MN firms interviewed agree to this statement. Many of them admit that the cost of this transfer is too high for them as Hong Kong does not have enough professionals and supporting facilities to make this shift worthwhile. Especially for the Japanese, 80% of them agree to the statement. Those who do not agree give the similar arguments to defend their positions — they do not keep anything secret to the local staffs, they have sent engineers for training abroad, they have introduced products completely new to Hong Kong, and they have trained local workers who are beneficial to the whole industry. These are facts. Amongst those disagreeing with the statement, 54.5% report that they begin to introduce research and development work in Hong Kong, showing that these firms start to re-structure their plants here for higher technology products.

Hence, though many of the MN firms admit to the truth of the statement, a bit more than half of them do not. Some of them even try to transfer higher end technology to Hong Kong. The validity of the statement, however, can be put alternately: it can apply to the Japanese but not the American investments in Hong Kong.

Another aspect concerns the Japanese investments in Hong Kong. In the previous chapter, we have stressed on the dynamic and aggressive strategy of the Japanese firms in the region and in this chapter so far, we have also proposed that the Japanese

merely use Hong Kong as a centre of the final stage of the production lines for their regional distribution of work. In order to supplement this line of argument, we have made the following statement:

"The Japanese investments in Hong Kong are mostly export-oriented to the third countries or looking at the local market."

All of the Japanese firms interviewed agree to this statement. They further reply that this trend is most unlikely to change in future. In other words, the determination of the Japanese firms to make Hong Kong as a sales centre for their final products is very obvious. And this is the main reason for them to remain here in face of spiral increase in cost.

The third aspect is about the American investments. As discussed before, most of the U.S. firms investing in the region are rather passive as for the lower costs production areas and usually found in the type of simple transnational investments. Following this same line of argument, we can deduce the following statement:

"American investments are mostly for securing the supply of components and parts for the parent companies."

In replying to this statement, 84.6% of the U.S. firms admit to the validity of the statement. The firms rejecting are those who are induced to invest here because of the oligopolistic pressure exerted by the Japanese counterparts. However, this trend is believed to be changing in the recent years in the direction that the local subsidiaries become more independent than before and the distribution of the final outputs are more diversified to other export markets or to local manufacturers. This shift is unavoidable as Hong Kong is to be specialized in the higher end products sector to meet the rapid growing regional

markets. Apart from this, the shift is also due to the change in role of the local subsidiaries, to become the sales and information centre in addition to production centre. Some of the firms become more independent because of the 1975 oil crisis. At that time, the parent companies were hit seriously to the extent that the local subsidiaries had to seek their own sales outlets for their products.

d) Summary and Conclusion

In this chapter, we have tried to present the survey results on the multinational electronics firms in Hong Kong. Though great efforts are tried to make the results valid and reliable, biases arising from the frame problems, response or non-response errors cannot be avoided and thus should not be overlooked.

Nearly all the overseas investments in the industry are undertaken by MN firms. Amongst them, the American firms are dominant in position, no matter in number, employment size or capital involvements, and the Japanese firms come next. In the '60s, only U.S. investments were found but starting from 1972, investments from other countries also came. Nearly all the multinationals, regardless of the country origin, prefer wholly-owned to joint-venture subsidiaries.

These investments are concentrated in the consumer goods sector, but the computer parts and semi-conductor manufacturing also share a great portion. The volume of production are also found concentrated in a few firms, as one-third of the firms share about two-thirds of the total employment size, production value and factory area.

Four investments models can be identified. The joint-venture model is the investments made by two parties, one local and one foreign, of nearly equal equities share. This model has appeared recently and only found with U.S. multinationals. The firms thus established are

much more independent and have the better combinations of the comparative advantages of the two parties. The simple transnational model is the investments made by smaller multinationals in which the international division of work within the group is not so clearly defined. They usually have only one plant in Hong Kong or a few subsidiaries outside their home countries. More investments, especially the U.S., are found in this model. The multinational vertically integrated model is the investments undertaken by large international groups with clear cut hierarchy and efficient division of work amongst the different branches in world. Within the region, these groups follow a vertically integrated strategy of investments. The subsidiaries in Hong Kong are larger in scale but less in autonomy. Similar to this is the multinational horizontally integrated model. The differences are found in the areas that the groups follow a horizontally integrated strategy of investments in the region and that the products are in the standardized consumers final products as described by the product life cycle thesis instead of market internalization consideration.

Almost all the firms have only one plant per establishment, and for the great majority of them the premises are leased. It is found that the MN firms are employing more skilled workers recently and the rate of absorbing skilled workers is much faster than that of the whole industry. In general, the percentages of the expatriates to total employee are declining for all the firms when comparing with the commencing years, but these percentages are still exceptionally high for the Japanese and Australian firms. Most of the MN firms are annoyed by the high turnover rate of the operatives, and many measures are taken to remedy the situation. Expenses for R & D are generally low, but comparatively speaking, U.S. and Netherland firms, and firms for manufacturing consumer and equipment parts are much

higher in percentages. No R & D is being done by Japanese and Australian firms in Hong Kong. The portion of imported materials are generally high, and even higher for the products of higher technology.

The U.S. and the Netherland firms, and for the firms manufacturing consumer final products, equipment parts and semi-conductor are much larger in annual production value. About 40% of the production value are counted as value-added, but the Japanese firms are rather low in these percentages. In average, 90% of the production in Hong Kong are for export. The sector of least export portion is the passive mechanical components sector in which one third is for local use. Comparing with the commencing years, all the firms show declining percentages in exporting back to the parent companies. Again, the Japanese firms are exceptional — they actually never send back the products to their parent firms.

The firms staying here are those experiencing rapid growth ever since the first date of establishment. In average, the U.S. and Japanese firms are greater in the growth rates as measured by employment size, output value and factory area. By product, the manufacturing of consumer final products, equipment parts, and semi-conductor are higher in the growth rates. The new firms show much higher in the growth rates than the older ones as the former are mainly in the emerging sectors. The growth rates of the greatest firms are quite satisfactory also.

In the face of rising production cost, half of the firms still have expansion plan in these 2 years. Towards the long run uncertainty, more than half of the firms worry about the outcome of the 1997 issue. This uncertainty in fact substantially influence the long term investments strategy of the MN firms in the direction unfavourable to Hong Kong.

Nearly half of the firms agree that the transfer of technology in production by the foreign electronics firms to Hong Kong is very little or insignificant, particularly for the Japanese. However, this portion should not make us to deny altogether the importance of the MN firms in transfer of technology: the factory management techniques are transferred instantaneously, new products are introduced, larger number of workers are trained and the research and development of the products will be shifted to Hong Kong by many firms gradually.

All of the Japanese firms invested here admit that they are usually looking for export to a third country or to local sales. This is consistent with our descriptions about the Japanese firms: they follow a regional division of work strategy with Hong Kong as a centre for sales and information, and thus little technology is transferred, smaller scale is operated, less workers are employed, few final products is shipped back to Japan and less eager expansions are found.

Most of the American firms agree that they invest here mostly for securing the supply of components and parts for the parent companies. But, they further point out that the trend is changing recently that the channels of distribution of final outputs are more diversified, through export to other countries or local sales. The change of policies of the U.S. multinationals may have significant effects on the further development of the industry.

CHAPTER VII

SUMMARY AND PROSPECT

a) A Summary of Study

The basic objective of our study is to investigate the importance of the MN firms to the economic development of a country. To have an intensive study and for illustrative purpose, we concentrate our efforts in the area of foreign participation in the electronics industry of Hong Kong, simply because that electronics industry has extensive foreign interest, its weight to the Hong Kong's economy is increasing and the industry has experienced rapid technological improvement in the past twenty years.

The openness of Hong Kong's economy and the policy of non-discrimination of the government towards foreign firms have provided a favourable condition for the development of the MN firms — and it is no exception for the MN firms in the electronics industry. This background provides a good basis for the relevancy of our study on this topic.

As the overseas investments in the industry are almost exclusively made by the MN firms, the government published statistics on overseas investments can be used to describe the behaviour of the MN firms, though they are incomplete and inadequate for in-depth analysis. To supplement our study, a direct survey on the MN firms in the industry has been conducted.

The major findings of our study are in two areas. Firstly, the development of electronics industry depends heavily on the participation of these MN firms and the role of tutor they play in the process so

far, as revealed by the relative growth rates of the local and foreign sectors. Secondly, the attitudes of these MN firms are found depending on their regional policies in pursuing their own global objectives. A strong national-specific pattern, particularly for the American and Japanese, is observed in their investments in Hong Kong and in the region as well.

In the early sixties, the electronics industry and foreign investments in electronics industry were almost the same in Hong Kong. In other words, the electronics industry in the beginning were in fact transplanted by the MN firms. However, their weight in the industry was found declining since then.

The export performance of the electronics industry is remarkably good compared with other industries. Its growth rate in export stands high at 43.9% per annum since 1961. In 1980, electronics alone accounted for 18.8% of Hong Kong's total domestic export. The export portion shared by foreign firms stood as high as 94.2% in 1969, and still maintained at 39.2% in 1980. The importance of MN firms in exports can further be demonstrated as, in average, 90% of the total production by these firms are for export. In terms of employment, from 1966 to 1980, an increase of 11.5% per annum is found in the growth of employment for the whole industry. In 1980, the industry shares 10.1% of the total manufacturing manpower in Hong Kong. Within the industry, the portion shared by the MN firms were 53.9% and 32.3% in 1973 and 1980 respectively. These concretely demonstrate the importance of the MN firms in the industry and their role as tutor to local entrepreneurs.

In the area of technology transfer, the result is less conspicuous. Though many of the consumer products were initiated by local manufacturers, products of higher technology are brought about by multinationals. Earlier manpower statistics have shown that the portion of

skilled to total workers in the foreign firms are smaller than that of the local ones. In addition, nearly 50% of the MN firms agree that the transfer of technology in production by these firms to Hong Kong is very little or insignificant. However, we must remember that they actually initiated the industry in a large scale. The techniques of factory management (especially large scale operation plant) are transferred immediately after their establishments, new products are introduced and workers of higher calibre are trained up by these firms. Many local firms are just following their foot-steps. Therefore, we can conclude that the technology transfer in the past is significant for the development of the industry, but is still inadequate to transform Hong Kong into the producer of advanced products.

Most of the existing MN firms have experienced rapid growth ever since the first date of their establishment, no matter measured in terms of factory area, employment or output. In addition, they are found to have better international connections, and more scale economy arising from larger operation size, when compared with their local counterparts. Consequently, about half of the MN firms still have expansion plans in these two years. However, towards the longer term uncertainty, i.e., the 1997 issue, some MN firms are pessimistic. For various reasons, most of their premises are leased and many of them are hesistant to commit heavy capital intensive investments here. This factor will undermine the importance of MN firms and the future development of the industry in Hong Kong.

Generally speaking, little dualism is found in this industry. Due to the compactness of the Hong Kong economy, there is high mobility of technical personnel as well as workers at the operatives level. Competition is keen and imitation is fast. Therefore, the foreign firms in the industry are well integrated into the economy as a whole.

Concerning the MN firms in a broader perspective, some pattern of investment strategies by these firms in Hong Kong as well as in the neighbouring countries in the region can be observed. We stress that the study of MN firms cannot be confined to a single economy. In the first place, alternative for investment locations are available, and the MN firms are free to choose the countries in the region for direct investments. Thus, a comparative study on these countries is necessary. In the second place, being one of the three major powers of electronics industry in the world (the other two are U.S. and the countries in the Western Europe), the S.E. Asian countries together with Japan are found much closer in relationship.

Some trend of division of labor can be found among the countries in the region. Japan is specialized in the development of the advanced industrial and some innovative products, Hong Kong together with Singapore, Korea and Taiwan are specialized in some industrial equipment goods, components and fashionable consumer goods, and the other less developed countries are responsible for the lower end, labor-intensive and standardized products. The MN firms are found investing in this region according to this pattern. On the one hand, they fully exploit the different comparative advantages among the countries in their investments, and on the other hand, they also help to re-structure the industry of the different countries in the process.

Particularly noteworthy are the investments made by Japanese and American firms. In fact, they virtually shape the pattern of development and determine the rate of change of the electronics industry in these countries. Their investments are basically the result of oligopolistic joint action and reaction, and the sequence roughly follows the product-life cycle formulation. But, the American firms are found more in the type of intermediate products market

internalization, whereas the Japanese firms are more inclined to exploit comparative advantages for local and export opportunities, in their common effort to obtain lower cost production sites.

In Hong Kong, American investments dominate the overseas sector while the Japanese come next. Four investment types can be distinguished according to their characterisitcs in the scale of operation, the degree of dependency on the parent firm and the relationship with the other subsidiaries within the group. They are: the joint-venture type formed by two parties of about equal share; the simple transnational type usually established by smaller multinationals in which the international division of work within the group is not so clearly defined; the multinational vertically integrated type usually undertaken by large international groups with efficient management pursuing a policy of vertical integrated investment strategy within the region; and the multinational horizontally integrated type, also made by large international groups following a horizontally integrated strategy of investments in the region. It is found that half of the U.S. investments in Hong Kong belong to the simple transnational type, whereas 60% of the Japanese investments are the multinational vertically integrated type.

b) Prospect of the Electronics Industry in Hong Kong

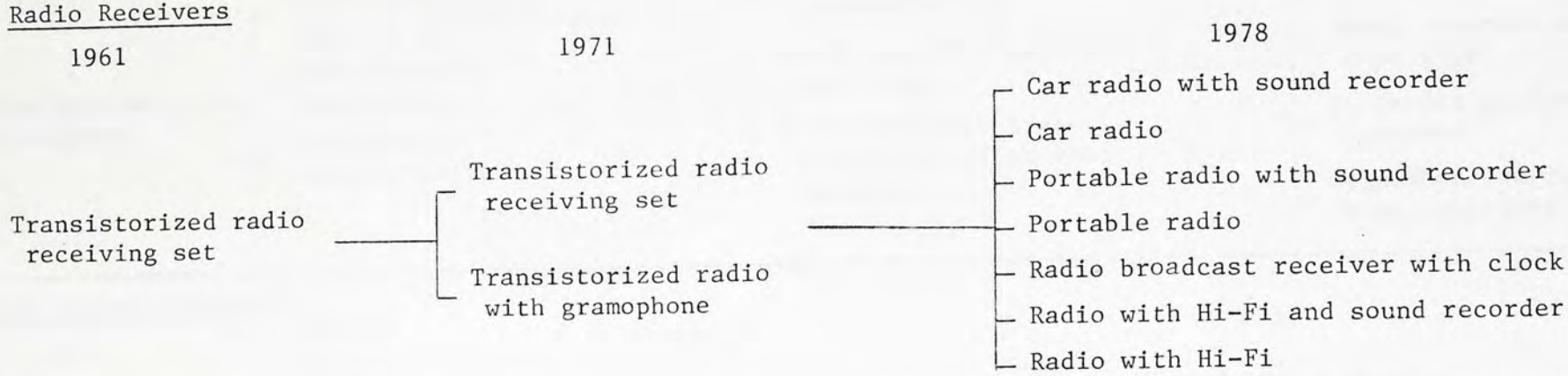
Before we comment on the trend of development of the electronic industry, we have to look back into its history. The development of electronics products in Hong Kong can be revealed from the commodity composition as appeared in export statistics, since 90% of the electronics products are for export. Diagram VII.1 summarizes the trend of the development by sub-sectors, the years indicate the dates of changes in the commodity descriptions. As the SITC code had been changed in 1978, many of the commodities descriptions were also changed accordingly and therefore, it should not be strictly interpreted that

DIAGRAM VII.1

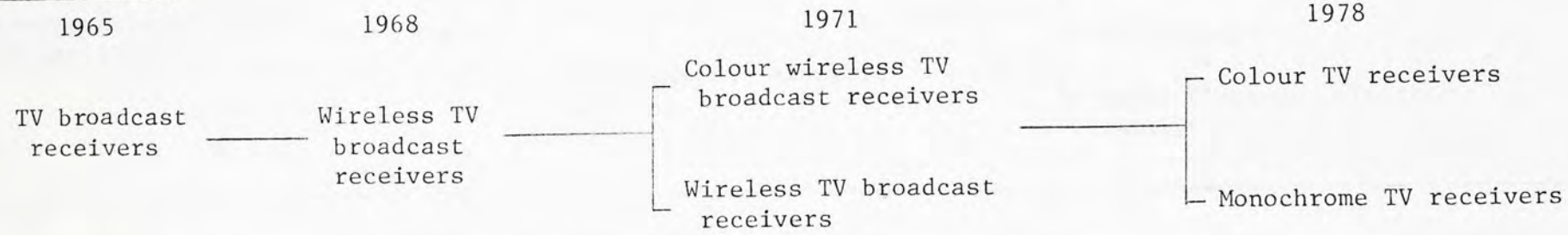
COMMODITIES DESCRIPTIONS OF ELECTRONICS PRODUCTS AS FIRST APPEARED IN EXPORT STATISTICS

A. CONSUMER GOODS

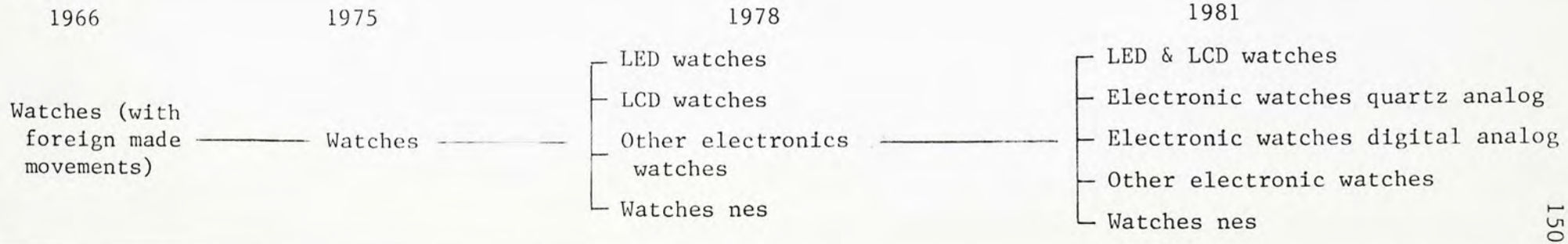
i) Radio Receivers



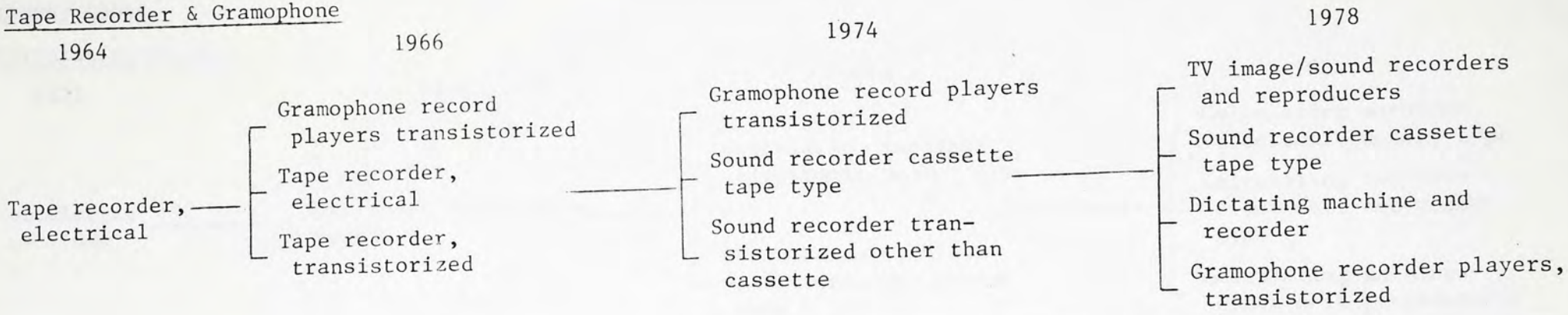
ii) TV Receivers



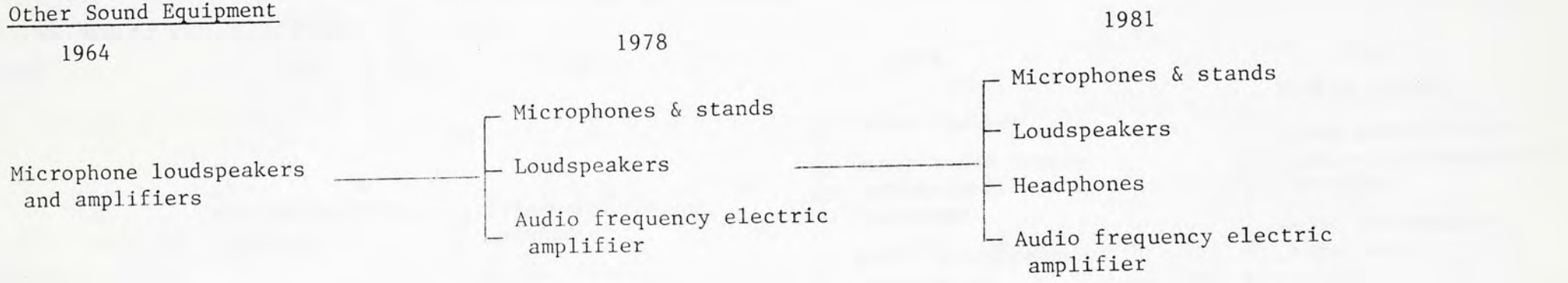
iii) Watches



iv) Tape Recorder & Gramophone

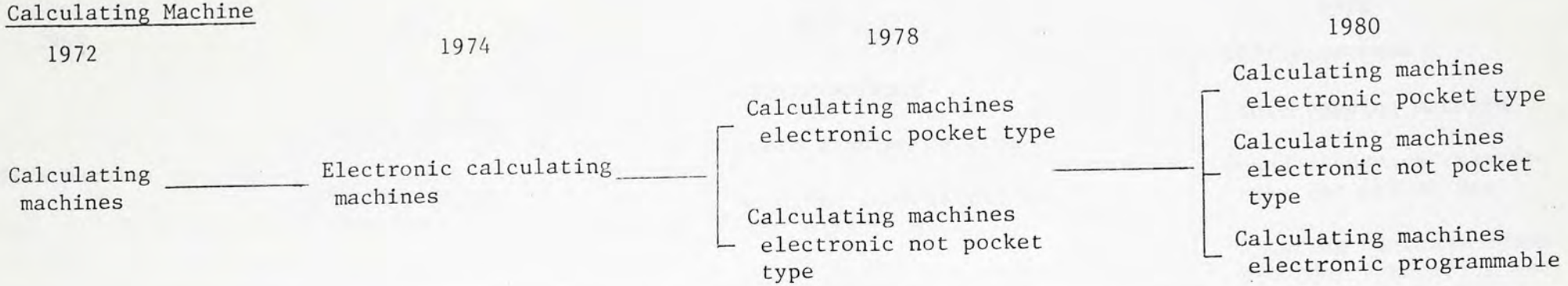


v) Other Sound Equipment

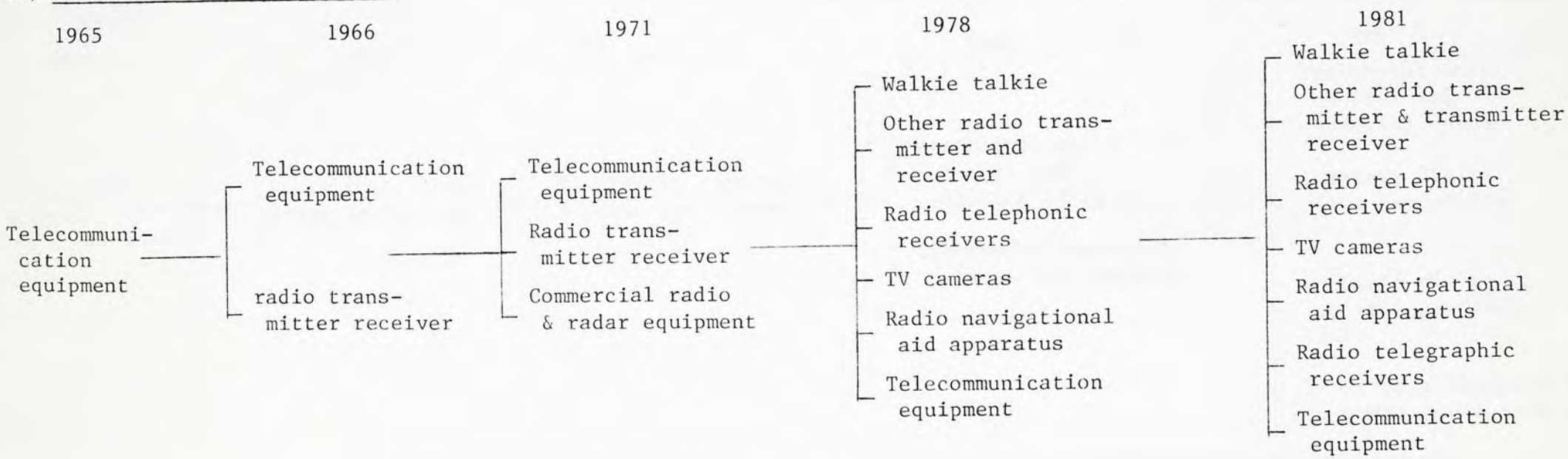


B. EQUIPMENT GOODS

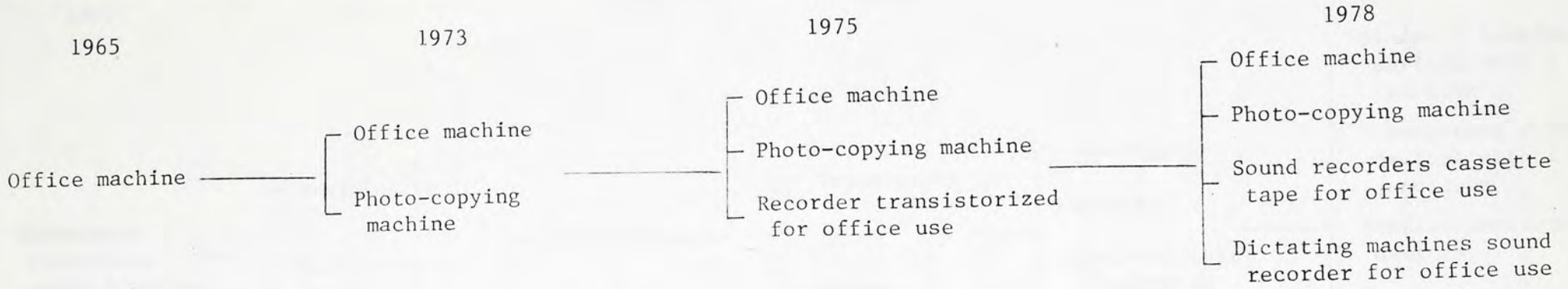
i) Calculating Machine



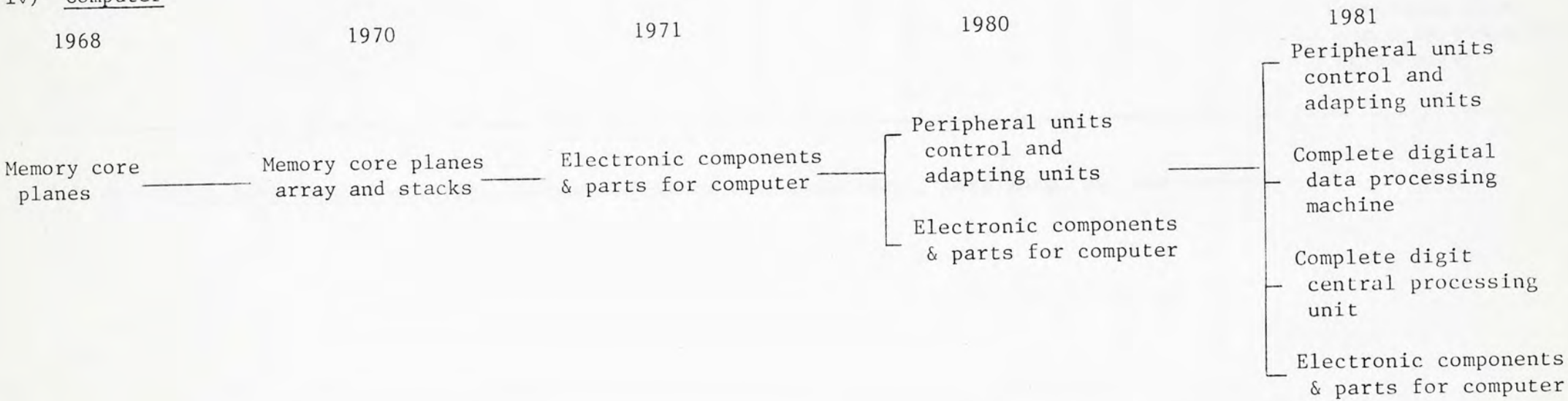
ii) Telecommunication Equipment



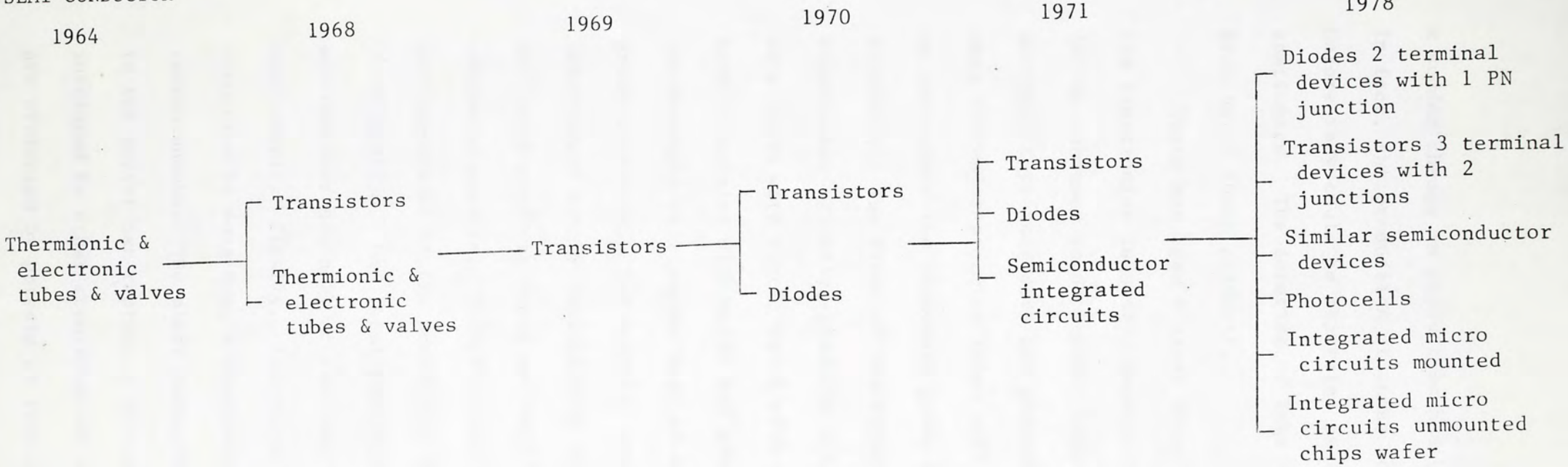
iii) Office Equipment



iv) Computer



C. SEMI-CONDUCTOR



Source: Hong Kong Trade Statistics, Census and Statistics Department, Hong Kong, various issues.

a sudden change in production had been found in that particular year. In fact, the production of these commodities appeared one or two years before they could be separated as individual items in the export statistics. The duration of lags depended on the rates of export growths of these products.

There has been a clear trend towards product diversification in the electronics industry, especially in the latter half of the 70's. In the consumer goods sector, radio receivers, TV receivers, electronics watches, tape recorders and gramophones and other sound equipments were the major products (also with electronics toys). In the future, we may expect the consumers goods sector to continue to develop and diversify. The trend of development will be found in the following directions. Firstly, products will be more and more multi-functional, say, radio with clock, watch with games, watch with dictionary, hand-held calculator with watch and games, etc. as appeared now. Secondly, the products will become more advanced and appeal to higher income group consumers. For example, one of the electronic toys manufacturers interviewed simply replied that their target groups had been changing and their products would not only be for the children but also for the adults as pastime. Thirdly, more emphasis will be placed on the design and appearance of the products. Again, this change is consistent with world fashion. One local electronics watch manufacturer remarked that watches were not only necessities but also fashionable decorations for most people. Finally, imitation of new consumer goods from other countries by Hong Kong's electronics manufacturers will become almost instantaneous. The alert entrepreneurs and the associated R & D teams in the sector can reproduce virtually any new fashionable products initiated by other countries and start production unless these products are protected by patents or some crucial components are banned to supply to Hong Kong.

In the equipment goods sector, products diversification were also found in recent years. Amongst them, telecommunication equipment and computers were more impressive. Electronics components and parts for computer were the traditional products in the electronics industry. Starting from the early 80's, exports of peripheral units control and adapting units, complete digital data processing machines, and complete digit central processing units were also found. In the future, we should expect that the manufacturing of computers will continue to expand in Hong Kong as to meet the rising demand of computers in the world. Besides, the growth of computers production will also be led by local demand, particularly in the production of personal computers and micro processors. As computer science will soon become a basic course in secondary education, many schools will have to install micro computers. Another reason is the popularity of computer management concepts amongst large enterprises, trading companies and factories. Consequently, subsidiaries of large computer manufacturers will start to produce the complete machine in Hong Kong. Furthermore, personal computer will also be useful to the common people for personal accounting, investment and so on. Telecommunication equipment also had a long history of production in Hong Kong, but it was not until the last few years that such products were diversified and increased in export values. We may expect this trend to continue in the '80s. Again, this trend will be supported by the rising demand for telecomminication equipment in the world.

The parts and components required for the manufacturing of consumer and equipment goods are coming from two sources: from imports or from local producers. In the past, an overwhelming portion of the components, and crucial components in particular, were from imports. These imports might be from subsidiaries of the same groups or from

cheapest available overseas suppliers. In future, more investments in the components and parts for these sectors are expected to appear so as to meet the rising demand from local manufacturers. For example, a local manufacturer started the production of CMOS (complementary metal-oxide semiconductor) for the local electronics watches factories; and another joint-venture firm also started to produce the tuning fork for electronics watches in the last two years.

In the semi-conductor sector, investments in Hong Kong were basically by the MN subsidiaries for their parent companies. Therefore, the change in export commodities composition in effect showed the change in world demand and the change in technology for semi-conductors. As large scale production of semi-conductors will be less efficient in Hong Kong, we may expect little product diversification in this sector. However, as Hong Kong is changing to higher technology products in general, the actual production process involved for the same products will also be upgraded.

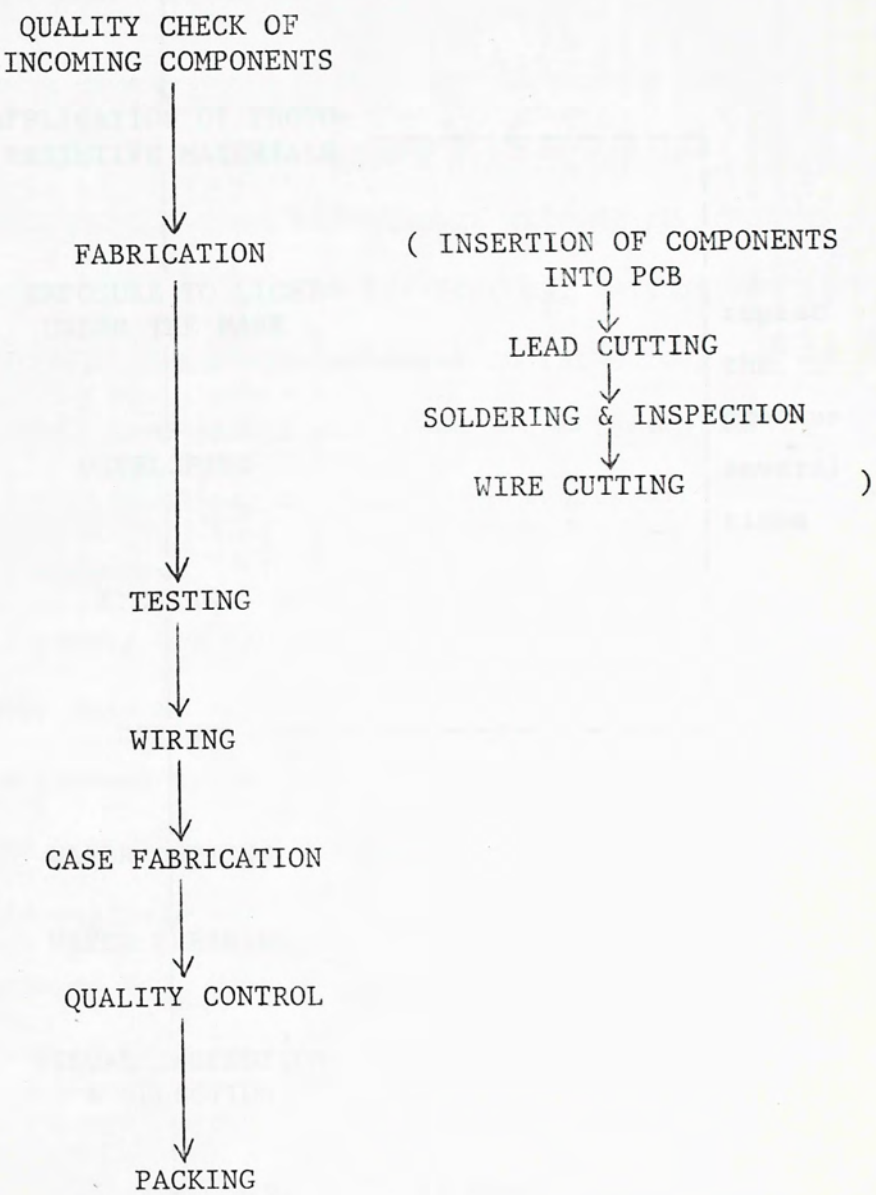
The prospect of Hong Kong's electronics industry can also be reviewed by the shift in technology involved. The technological level of the Hong Kong's electronics industry was generally regarded as low in the past. For illustration, we present in Diagram VII.2 the production process of the consumer goods in general and the bi-polar transistor IC since these products are most important in Hong Kong. The production process of the equipment goods is not much different from that of the consumer goods, except the products may be more bulky and precisive, and more components are involved.

For the consumer goods, the whole production process is learnt well by the local manufacturers, as it is quite simple indeed. In the past, most of the work was done manually, particularly the fabrication process, with rather simple equipment and machineries. However,

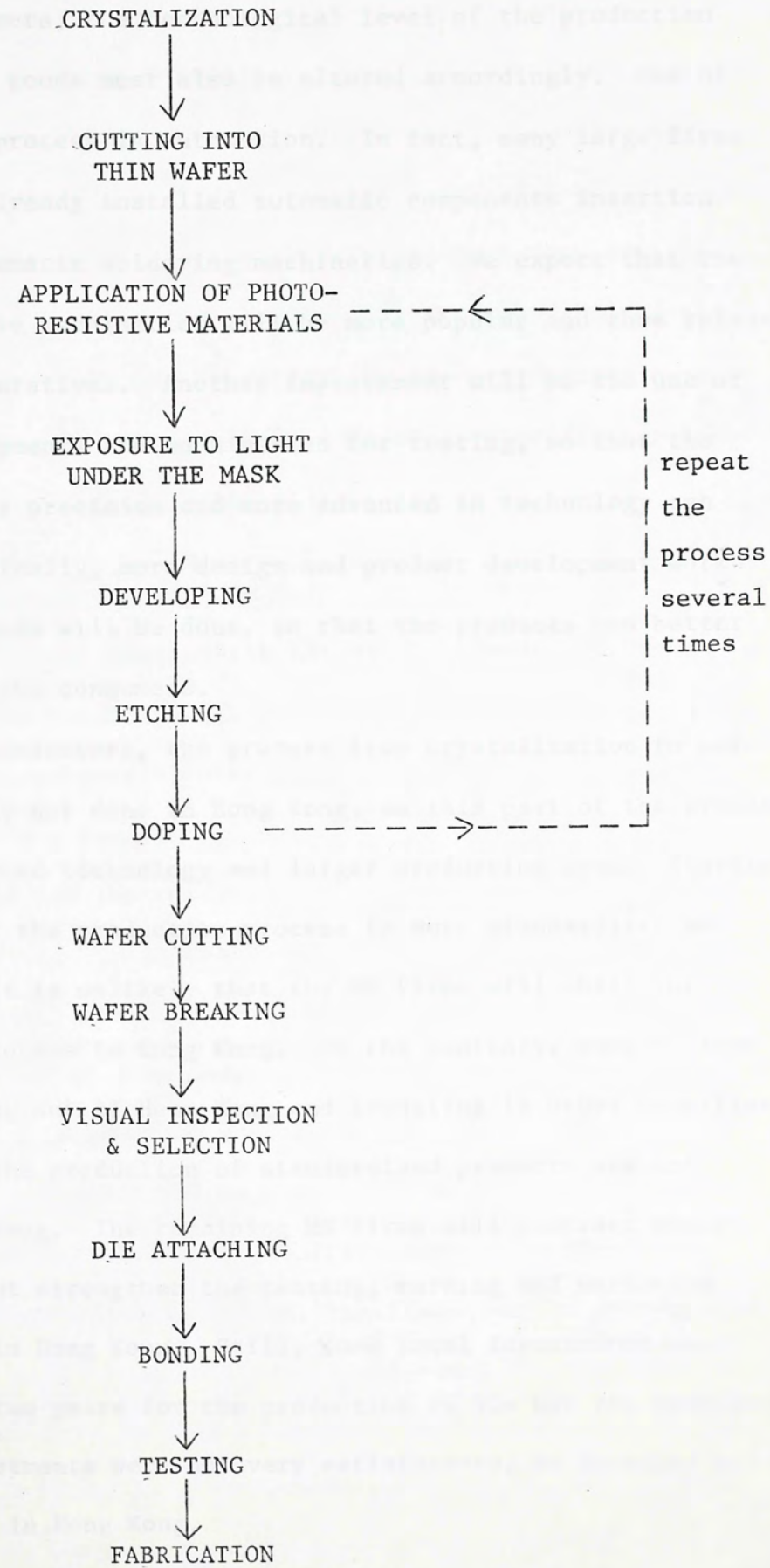
DIAGRAM VII.2

PRODUCTION PROCESS OF ELECTRONICS PRODUCTS

a) Consumer Goods



b) Bi-polar Transistor IC



Source: From survey.

as rents and wages in Hong Kong are increasing, and also the qualities of the consumers goods have to improve so as to meet the demand for higher income consumers, the technological level of the production process of consumer goods must also be altered accordingly. One of the changes in the process is automation. In fact, many large firms in Hong Kong have already installed automatic components insertion machineries and automatic soldering machineries. We expect that the installation of these machineries will be more popular and thus release large numbers of operatives. Another improvement will be the use of more precisive equipments and machineries for testing, so that the products with higher precision and more advanced in technology can be manufactured. Finally, more design and product development work for the consumer goods will be done, so that the products can better serve the needs of the consumers.

As for semi-conductors, the process from crystalization to wafer cutting is generally not done in Hong Kong, as this part of the process requires more advanced technology and larger production area. Starting from wafer cutting, the production process is more standardized and labor intensive. It is unlikely that the MN firms will shift the whole production process to Hong Kong. On the contrary, some of them even consider moving out of Hong Kong and investing in other countries in the region, as the production of standardized products are not efficient in Hong Kong. The remaining MN firms will contract their productions here but strengthen the testing, marking and marketing of these products in Hong Kong. Still, some local investments were found in the last two years for the production of ICs but the development of their investments were not very satisfactory, as revealed by many manufacturers in Hong Kong.

Here, we can obtain an impression that the consumer goods sector of Hong Kong's electronics industry is very advanced and prosperous

with a wide range of product diversification, when compared with the neighbouring countries. In fact, one of the MN firms in the consumer goods sector under survey admitted that they had to learn back from the experience of the Hong Kong subsidiary. The equipment goods is also developing very fast, though they are still not very advanced. The semi-conductor sector is much less developed and behind those of Korea, Taiwan and Singapore. The absolute gap between Hong Kong and the other countries in AGB will be widened in this sector. Unlike the equipment goods sector, it is more difficult for manufacturers to shift to semi-conductor sector as barred by the technology gap between Hong Kong and the developed countries.

c) Role of Hong Kong Government in Future Development

Once again, we can demonstrate the distinct model of development of Hong Kong's electronics industry, when compared with government planning schemes of promotion in Singapore, Taiwan and Korea. The relative strength of consumer sector and weakness in semi-conductor sector is not the result of deliberate government action, but rather the lack of it. It is the result of the natural development process. The capital, machineries, components or skill labors can move freely in or out of Hong Kong, so that Hong Kong can adapt to the changing comparative advantages more smoothly. One consequence of this openness is that the local manufacturers may have more options to buy the raw materials from best sources either from other local manufacturers or from overseas. Thus, the inadequacy of strong support in components and parts from local supply is not a serious handicap to the electronics industry in Hong Kong after all.

Traditionally, Hong Kong government does not actively involve in the promotion of the manufacturing industries, and this attitude is proved to be successful in the case of Hong Kong. Government investments

in the manufacturing sector are only found in the provision of industrial support facilities and technical back up services. The chief reason for the government participation in these respects is that the social benefits from these facilities are much greater than the private benefits and thus the private sector is unlikely to take up the responsibility. On the other hand, the local industrial support facilities and technical back up services are proved to be very inadequate, to the extent that it may be harmful to the development of the electronics industry if no corresponding measure is taken for remedy.

Therefore, we suggest that while generally the basic non-intervention principle should be upheld in Hong Kong, more positive role has to be played by the government. On the one hand, though Hong Kong is moving on its own way to the development of the electronics industry, something can be done to speed up this process, particularly when the threats from other neighbouring countries in this industry become more substantial. On the other hand, as the so-called structural change is occurring in the industry, some measures have to be taken to make the process more smooth and to reduce the frictional costs thus arising.

The actual government actions should be found in the following aspects:

i) long term manpower training programme, from high calibre engineers to skilful craftsmen, so that new technology can be more efficiently absorbed;

ii) promotion of overseas investments so as to speed up the process of technology transfer and to open up more new markets and new products to Hong Kong's manufacturers;

iii) building of more industrial estates at reasonable price and with well-coordinated supporting facilities so as to solve the

land shortage problem and to attract investments producing parts or components or finished products which are important to Hong Kong; and

iv) setting up of testing centre and laboratory centre so that the calibration of advanced products and product development can be done in Hong Kong.

The above suggestions only cover the production side, but other suggestions in financial side or export promotion may also be added if found appropriate. The efficient implementation of the above suggestions requires the setting up of new organizations and the co-operation of different government departments and public bodies.

d) The Trend of the MN Firms

As the local manufacturers are now very much on their own feet, the importance of the MN firms to the electronics industry may continue to decline in general. But in the future, a more important role of them will be found in introducing new technology, as local firms are more reluctant and less able to enter into new technology products. The MN firms manufacturing standardized and labor intensive products will be phased out of Hong Kong gradually while the firms producing diversified and advanced products will enter slowly. Some evidence have shown that these MN firms which possess premises here but involve in standardized products manufacturing are selling their premises in Hong Kong and shift to lower costs production countries. It is expected that more joint-ventures will develop as overseas investors find this model more advantageous and more powerful local partners will emerge during the development process. As revealed in the survey, more and more MN firms will take Hong Kong as a regional headquarter or the information centre in this trade in the region, in addition to normal manufacturing operations. This change is parallel with the

shift of Hong Kong to be the financial and other tertiary services centre in the region. Again, it must be stressed here that the 1997 issue is a deterrent to heavy involvement of the MN firms in Hong Kong. However, a few of them frankly admitted in the survey that their investments in Hong Kong were, to a rather large extent, due to its proximity to mainland China.

APPENDIX I

THE FRAME OF THE SURVEY

(List of electronics factories with overseas interest according to the 1981 survey of the TICD, Hong Kong Government, from which sample of factories for our survey is drawn.)

* Alphanetics Manufacturing Co. Ltd.

Ampex Ferrotec Ltd.

Asahi Electronic (HK) Ltd.

Astec Component Ltd.

* Atari-Wong Ltd.

BBN Computer Co., Ltd.

* Bel Fuse Ltd.

Carter Semiconductor Ltd.

CBS/Sony Hong Kong Ltd.

* Centralab HK Ltd.

Century Industries (HK) Ltd.

* Coronet Industrial Ltd.

* Daiichi Parts (HK) Co. Ltd.

* Data General H.K. Ltd.

* Dataproducts (HK) Ltd.

* Digital Equipment International Ltd.

Electronic Devices Ltd.

* Electronic Industry Ltd.

Fabri - Tek HK Ltd.

Fairchild Semiconductor (HK) Ltd.

* Hitachi Semiconductor (HK) Ltd.

* Hokuto Onkyo Corp. (HK) Ltd.

* Hong Kong Jesco Ltd.

* International Piezo Ltd.

* the firms interviewed.

* Kasuga Seiki Mfg. (HK) Ltd.

Kijima Musen (HK) Co. Ltd.

* Ming Sing Electronics Ltd.

* Mita Industrial Co., (HK) Ltd.

Mitsui Mfg. (HK) Ltd.

* Morse Electrophonic (HK) Ltd.

* Motorola Semiconductors HK Ltd.

* National Semiconductor HK Ltd.

NCR (HK) Ltd.

* NEC Hong Kong Ltd.

Onyx Centre (Electronics) Ltd.

Plessey Packaging (HK) Ltd.

Printed Circuits Int'l (HK) Ltd.

Radofin Electronics (Far East) Ltd.

S & T Enterprises Ltd.

SAE Magnetics (HK) Ltd.

Sanyo Electric (HK) Ltd.

Siliconix (HK) Ltd.

* Solfan Systems (HK) Ltd.

Sprague

Stuart Ltd.

Swire Magnetics Ltd.

Tanasin (HK) Ltd.

Tek Devices Ltd.

Teledyne Semiconductor

Toko Electronic Mfg. Co. Ltd.

Uniden Electronics, HK Ltd.

Universal Appliances Ltd.

Upfold Electronics Ltd.

Videlec (HK) Ltd.

Winner Electron Co. Ltd.

* Xylex Ltd.

Yokohama Musen Ind. Co. (HK) Ltd.

APPENDIX II

ETIONNAIRE

1. Name of company _____

2. First year of production 19 _____

3. Percentage of equity owned by foreigners _____ %

   Of which country _____

4. Gross area of factory

	at commence	at present
	_____ ft.	_____ ft.

   The premises at present are

	self-owned	leased
	☐	☐

   No. of plants in H.K. _____

5. Employment: (average no. of workers employed)

	at commence	at present
operative	_____	_____
other employee	_____	_____

   Average no. of expatriates employed

at commence	at present
_____	_____

I. 1. Products manufactured at commencing year _____

   Change of products over years

year	products
19_____	_____
19_____	_____
19_____	_____

   Products produced at present _____

2. The percentage of production that exports

at commence	at present
_____ %	_____ %

   The portion of export to parent company

_____ %	_____ %

3. Value of production earch year:

	at commence	at present
a) Below HK$ 1 million	☐	☐
b) $ 1 million – 10 millions	☐	☐
c) $ 10 millions – 50 millions	☐	☐
d) $ 50 millions – 100 millions	☐	☐
e) over 100 millions	☐	☐

4. Percentage of value-added* to total value of production (value-added = gross output value -value of consumption of materials, supplies and industrial services)

at commence _____% at present _____%

5. R & D per year to total production cost _____% (at present)

6. Imported to total purchase of raw materials _____% (at present)

7. Initial capital invested by parent company HK$ _____

Channels of reinvestment finance _____

_____

8. Annual turnover rate of operatives _____% (at present)

Measures to improve the situation _____

_____

_____

II. 1. Apart from Hong Kong, what are the countries in S.E. Asia that your company also has investments in manufacturing?

What is the investment strategy of your company in this region?

What are the major linkages of the plant here to the parent company as well as to the other subsidiaries?

2. What are the reasons keeping your company staying in Hong Kong?

Do you consider the investment climate of Hong Kong is still favourable or not?

What are the future expansion plans of your company in these two years?

In what ways that the 1997 issue affect your company?

3. Make comments on the following statements:

a) "The transfer of technology in production by the foreign electronics firms to Hong Kong is very little or insignificant."

b) "The Japanese investments in Hong Kong are mostly export-oriented to the third countries or looking at the local market."

c) "American investments are mostly for securing the supply of components parts for the parent companies."

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